INCH-POUND
MIL-M-38510/61C
15 June 2004
SUPERSEDING
MIL-M-38510/61B
15 July 1985

MILITARY SPECIFICATION MICROCIRCUITS, DIGITAL, ECL, FLIP-FLOPS, MONOLITHIC SILICON

Inactive for new design after 6 September 1996.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product herein shall consist of this specification sheet and MIL-PRF 38535

- 1. SCOPE
- 1.1 <u>Scope.</u> This specification covers the detail requirements for monolithic silicon, ECL, logic gating microcircuits. Two product assurance classes and a choice of case outlines and lead finishes are provided for each type and are reflected in the complete part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).
 - 1.2 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535, and as specified herein.
 - 1.2.1 <u>Device types.</u> The device types are as follows:

Device type	<u>Circuit</u>
01	Dual D-type flip flop with preset and clear
02	Dual D-type flip flop with preset and clear
03	Hex D-type flip flop
04	Dual J-K flip flop with preset and clear

- 1.2.2 <u>Device class.</u> The device class is the product assurance level as defined in MIL-PRF-38535.
- 1.2.3 <u>Case outlines.</u> The case outlines are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	<u>Terminals</u>	Package style
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line
F	GDFP2-F16 or CDFP3-F16	16	Flat
2	CQCC1-N20	20	Square chip carrier

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, 3990 East Broad St., Columbus, OH 43218-3990, or emailed to bipolar@dscc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at www.dodssp.daps.mil.

AMSC N/A FSC 5962

1.3 Absolute maximum ratings.

Supply voltage range	0 V to V _{EE} (most negative power supply voltage
Device type 01	165 mW
Device type 02	
Device type 03	
Device type 04	200 mW
Lead temperature (soldering, 10 seconds)	+260°C
Junction temperature (T _J) <u>2</u> /	165°C
Maximum output current	50 mA
Thermal resistance, junction to case (θ_{JC}) :	
Cases E, F and 2	(See MIL-STD-1835)
1.4 Recommended operating conditions.	
Supply voltage (V _{EE})	5.46 V minimum to -4.94 V maximum
Minimum high level input voltage (V _{IH})	
(at 500 linear feet per minute) (ft/min)	-1.000 V at T _C = 125°C
	-1.255 V at T _C = -55°C
Maximum low level input voltage (V _{IL})	1.475 V at T _C = 25°C
(at 500 linear ft/min)	-1.400 V at T _C = 125°C
	-1.510 V at T _C = -55°C
Manager and Constitution for the	40 0/
Normalized fanout (each output)	
Case operating temperature range (T _C) (at 500 linear ft/min)	55° to +125°C
Case operating temperature (at still air) Device types 01, 02, 04 (cases E and F):	55° to 1125°C
Device types 01, 02, 04 (cases E and F) Device type 03:	55° 10 +125°C
(case E)	-55° to +100°C
(case F)	
(Case 1)	55 10 1110 0
Input data setup time, (t _{SETUP})	
Device type 01	2.5 ns minimum
Device type 02	1.0 ns minimum
Device type 03	2.5 ns minimum
Device type 04	2.5 ns minimum
Input data hold time, (t _{HOLD})	
Device type 01	
Device type 02	
Device type 03	
Device type 04	ns muminim

 ^{1/} Must withstand the added P_D due to short-circuit test (e.g., I_{OS}).
 2/ Maximum junction temperature should not be exceeded except in accordance with allowable short duration burn-in screening condition in accordance with MIL-PRF-38535.

^{3/} Device will fanout in both high and low levels to the specified number of data inputs on the same device type as that being tested.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 <u>Specifications and Standards</u>. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-38535 - Integrated Circuits (Microcircuits) Manufacturing, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.

MIL-STD-1835 - Interface Standard Electronic Component Case Outlines

(Copies of these documents are available online at http://assist.daps.dla.mil;quicksearch/ or www.dodssp.daps.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 <u>Order of precedence.</u> In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

- 3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.4).
- 3.2 <u>Item requirements</u>. The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.
- 3.3 <u>Design, construction, and physical dimensions.</u> The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein.
- 3.3.1 <u>Terminal connections and logic diagrams.</u> The terminal connections and logic diagrams shall be as specified on figure 1.
 - 3.3.2 Truth tables and logic equations. The truth tables and logic equations shall be as specified on figure 2.
- 3.3.3 <u>Schematic circuits</u>. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity and the preparing activity upon request.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions				Device	Lin	nits	Unit
		-55°C ≤	-55°C ≤ T _C ≤ +125°C <u>1</u> /				Min	Max	
			T _C	V _{IH1}	V _{IL1}				
High level output	V _{OH}	V _{EE} = -5.2 V,	25°C	-0.780 V	-1.850 V	•	-0.930	-0.780	
voltage		V _{CC} = 0 V,	125°C	-0.630 V	-1.820 V	All	-0.825	-0630	V
		Load = 100Ω to $-2V$	-55°C	-0.880 V	-1.920 V		-1.080	-0880	
			T _C	V _{IH1}	V _{IL1}				
Low level output	V _{OL}	V _{EE} = -5.2 V,	25°C	-0.780 V	-1.850 V		-1.850	-1.620	
voltage		$V_{CC} = 0 V$,	125°C	-0.630 V	-1.820 V	All	-1.820	-1.545	V
		Load = 100Ω to –2V	-55°C	-0.880 V	-1.920 V		-1.920	-1.655	
			T _C	V_{ITH}	V_{ITL}				
High level threshold	V_{OTH}	V _{EE} = -5.2 V,	25°C	-1.105 V	-1.475 V		-0.950		
output voltage		$V_{CC} = 0 V$,	125°C	-1.000 V	-1.400 V	All	-0.845		V
		Load = 100Ω to $-2V$	-55°C	-1.255 V	-1.510 V		-1.100		
			Tc	V _{ITH}	V _{ITL}				
Low level threshold	V_{OTL}	V _{EE} = -5.2 V,	25°C	-1.105 V	-1.475 V			-1.600	
output voltage		$V_{CC} = 0 V$,	125°C	-1.000 V	-1.400 V	All		-1.525	V
		Load = 100Ω to $-2V$	-55°C	-1.255 V	-1.510 V			-1.635	
						01	-62		
Power supply drain	I _{EE}	V _{EE} = -5.2 V,				02	-72		mA
current		$V_{CC} = 0 V$				03	-121		
						04	-75		
		$V_{EE} = -5.2 \text{ V}, V_{CC} = 0 \text{ V}$	/ ,			01, 02,		375	μΑ
	I _{IH1}	V _{IH1} = -0.780 V at 25°0	C, -0.630	V at 125°C	,	03			
		-0.880 at -55°C				04		450	
						01		565	
High level input	I _{IH2}					02		700	μΑ
current						03		527	
						04		665	
	I _{IH3}					01		420	μΑ
						02		375	
	I _{IH4}					01		450	μΑ
						02		495	
Low level input	I _{IL}	$V_{EE} = -5.2 \text{ V}, V_{CC} = 0 \text{ V}$	/,						
current		V _{IL1} = -1.850 V at 25°0	C, -1.820	V at 125°C,	ı	All	0.3		μΑ
		-1.920 at -55°C							

See footnote at end of table.

TABLE I. <u>Electrical performance characteristics</u> – Continued.

Test	Symbol	Conditions	Device	Lin	nits	Unit
		-55°C ≤ T _C ≤ +125°C <u>1</u> /	types	Min	Max	
		V _{EEL} = -3.2 V, V _{CC} = +2.0 V	01	105		
Maximum clock	F _{MAX}	CL ≤ 5 pF (output under test)	02	200		MHz
frequency		Load = 100Ω to GND	03	115		
			04	105		
		$V_{EEL} = -3.2 \text{ V}, V_{CC} = +2.0 \text{ V},$	01	1.0	4.9	
Transition time,	t _{TLH}	<u>RL</u>	02	1.0	3.6	ns
low to high level		$\frac{ RL }{2}$ = 50 Ω , CL \leq 5 pF (output under test)	03	1.0	4.7	
		Load = 100Ω to GND (outputs not	04	1.0	5.3	
		under test)	01	1.0	4.9	
Transition time,	t _{THL}		02	1.0	3.6	ns
high to low level			03	1.0	4.7	
			04	1.0	5.3	
Propagation delay time,			01	1.1	4.9	
low to high level (clear or	t _{PLH1}		02	1.0	3.9	ns
preset to output			04	1.0	5.9	
Propagation delay time,		$V_{EE} = -3.2 \text{ V}, V_{CC} = +2.0 \text{ V},$	01	1.1	4.9	
high to low level (clear or	t _{PHL1}	$\frac{RL}{2}$ = 50Ω, CL ≤ 5 pF (output under test)	02	1.0	3.9	ns
preset to output		$\frac{ \nabla C }{2}$ = 50 Ω , CL \leq 5 pF (output under test)	04	1.0	5.9	
Propagation delay time,		Load = 100Ω to GND (outputs not	01	1.4	5.0	
low to high level (clock	t _{PLH2}	under test)	02	1.2	3.9	ns
to output			03	1.3	5.3	
			04	1.0	5.3	
Propagation delay time,			01	1.4	5.0	
high to low level (clock	t _{PHL2}		02	1.2	3.9	ns
to output			03	1.3	5.3	
			04	1.0	5.3	

^{1/} Limits are valid provided circuit is in a test socket and transverse air flow of 500 linear ft/min is maintained.

TABLE II. Electrical test requirements.

	Subgroups	(see table III)
MIL-PRF-38535	Class S	Class B
test requirements	devices	devices
Interim electrical parameters	1	1
Final electrical test parameters	1*, 2, 3, 9	1*, 2, 3, 9
Group A test requirements	1, 2, 3, 9, 10, 11	1, 2, 3, 9, 10, 11
Group B electrical test parameters when using the method 5005 QCI option	1, 2, 3	N/A
Group C end-point electrical parameters	1, 2, 3	1, 2, 3
Group D end-point electrical parameters	1, 2, 3	1, 2, 3

^{*}PDA applies to subgroup 1.

4. VERIFICATION

- 4.1 <u>Sampling and inspection.</u> Sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not effect the form, fit, or function as described herein.
- 4.2 <u>Screening.</u> Screening shall be in accordance with MIL-PRF-38535 and shall be conducted on all devices prior to qualification and quality conformance inspection. The following additional criteria shall apply:
 - a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.
 - b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.
 - c. Additional screening for space level product shall be as specified in MIL-PRF-38535.

- 4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-38535.
- 4.4 Technology Conformance inspection (TCI). Technology conformance inspection shall be in accordance with MIL-PRF-38535 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).
- 4.4.1 <u>Group A inspection.</u> Group A inspection shall be in accordance with table III of MIL-PRF-3853<u>5</u> and as follows:
 - a. Tests shall be as specified in table II herein.
 - b. Subgroups 4, 5, 6, 7, and 8 shall be omitted.
 - 4.4.2 Group B inspection. Group B inspection shall be in accordance with table II MIL-PRF-38535.
- 4.4.3 Group C inspection. Group C inspection shall be in accordance with table IV of MIL-PRF-38535 and as follows:
 - a. End-point electrical parameters shall be as specified in table II herein.
 - b. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.
- 4.4.4 <u>Group D inspection.</u> Group D inspection shall be in accordance with table V of MIL-PRF-38535. End-point electrical parameters shall be as specified in table II herein.
 - 4.5 Methods of inspection. Methods of inspection shall be as specified and as follows:
- 4.5.1 <u>Voltage and current.</u> All voltages given are referenced to the microcircuit ground terminal. Currents given are conventional and positive when flowing into the referenced terminal.

TABLE IIIA. Test conditions for all devices, group A inspection

Symbol	V_{IH1}	V_{IL1}	V_{IH2}	V_{IL2}	V_{ITL}	V_{ITH}	Α	В	С	;	С)	Е	
	(V)	(V)	(V)	(V)	(V)	(V)			t ≥ 1	μs	t ≥ ′	lμs	t ≥ 1	lμs
T _C = 25°C	780	-1.850	+1.11	+0.31	-1.475	-1.105	100Ω to -2.0 V	100Ω to GND	7	V_{IH}	T	$V_{IH} \ V_{ITH}$		V_{IH} V_{ITL}
T _C = 125°C	630	-1.82	+1.24	+0.36	-1.40	-1.0	100Ω to -2.0 V	100Ω to GND	T	V _{IH} V _{IL}	T	V_{IH} V_{ITH}	T	V _{IH} V _{ITL}
T _C = -55°C	880	-1.92	+1.01	+0.28	-1.51	-1.255	100Ω to -2.0 V	100Ω to GND	T	V _{IH} V _{IL}	Ţ	$V_{IH} \ V_{ITH}$		V_{IH}

DEVICE TYPES 01 AND 02

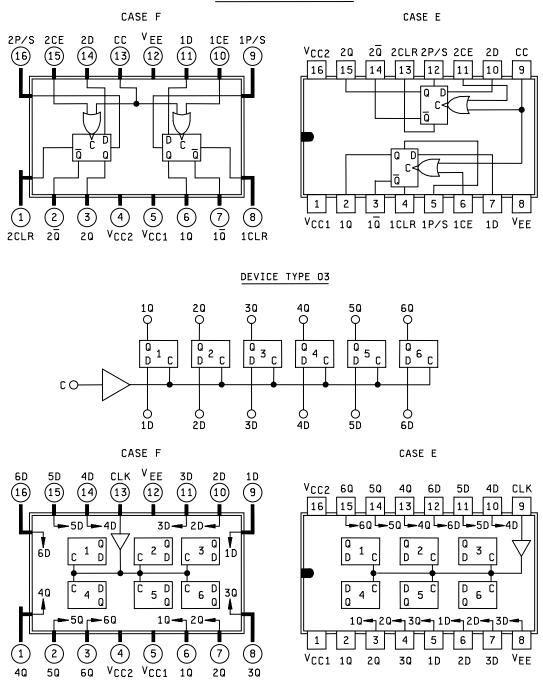
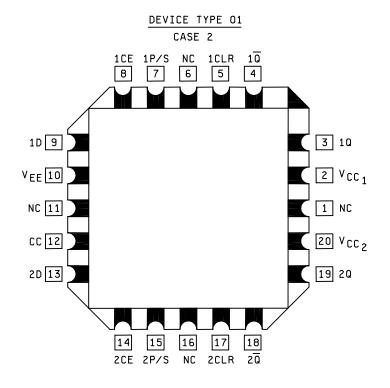


FIGURE 1. Terminal connections and logic diagrams.

DEVICE TYPE 04 CASE F CASE E 1J 2P/S 2K 2J V_{EE} 1K 1P/S V_{CC2} 20 20 2CLR 2P/S 2 \overline{K} 2 \overline{J} (15) (14) (12) (11) (10) (9) (16) 16 15 14 13 12 11 10 Q 2 Q P/S CLR J C K R C J CLR P/S Q 2 Q J C K CLR P/S a 1 a CLR P/S 4 5 2 3 7 2 (3) (5) **6** (4) (8) V_{CC1 1Q} 10 1CLR 1P/S 1K VCC2 VCC1 1Q 20 1 Q 1CLR

FIGURE 1. <u>Terminal connections and logic diagrams</u> - Continued.



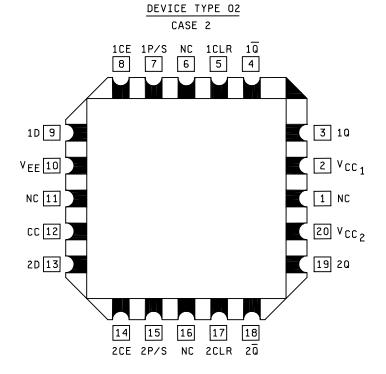


FIGURE 1. Terminal connections and logic diagrams - Continued.

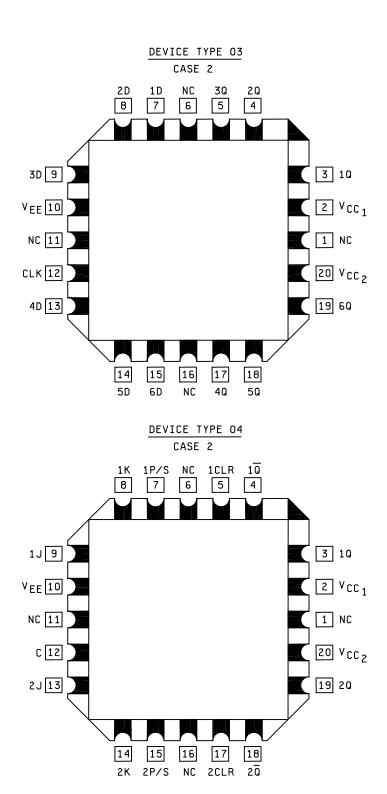


FIGURE 1. Terminal connections and logic diagrams - Continued.

Device types 01 and 02

ASYNCHRONOUS

CLR	P/S	Q	IQ
L	L	Q	Q
L	Н	Н	L
Н	L	L	Н
Н	Н	H*	H*

* This is an unstable condition, when clear (CLR) and preset (P/S) inputs return to their low level (inactive state) these states will not be maintained.

SYNCHRONOUS					
С	D	Q _{n+1}			
L	Х	Q _n			
H*	L	L			
H*	Н	Н			

X = Don't care

 $C = C_E + C_C$

*A clock H is a clock transition transition from a low to a high state.

Preset (P/S) and clear (CLR) override clock (CC) and clock enable (CE) inputs. Each flip-flop may be clocked separately by holding the common clock in the low state and using the enable inputs for the clocking function. If the common clock is to be used to clock the flip-flop, the clock enable inputs must be in the low state. In this case, the enable inputs perform the function of controlling the common clock. The outputs states of the flip-flop change on the positive transition of the clock.

Device type 03 SYNCHRONOUS

С	D	Q _{n+1}
L	X	Qn
H*	L	L
H*	Н	Н

X = Don't care

Clocking is common to all six flip-flops. Data transfer is accomplished on positive going transition of the clock.

Device type 04

ASYNCHRONOUS

CLR	P/S	Q	Q
L	L	Q	IQ
L	Η	Η	L
Н	L	L	Н
Н	Н	H*	H*

* This is an unstable condition, when clear (CLR) and preset (P/S) inputs return to their low level (inactive state) these states will not be maintained.

SYNCHRONOUS

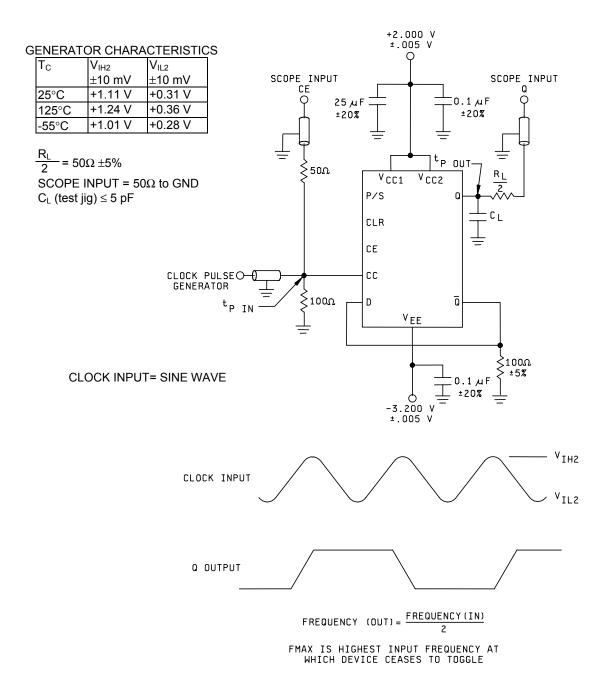
J	K	Q _{n+1}
L	L	$\overline{\overline{Q}}_n$
Н	L	L
L	Ι	Ι
Н	Н	Qn

Output states change on positive transition of clock for \bar{J} - \bar{K} input conditions present.

Preset (P/S) and clear (CLR) override the clock. The output states of the flip-flop change on the positive transition of the clock.

FIGURE 2. Truth tables.

^{*}A clock H is a clock transition transition from a low to a high state.

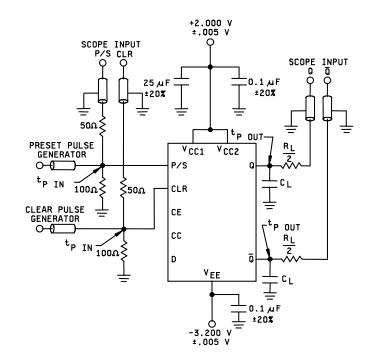


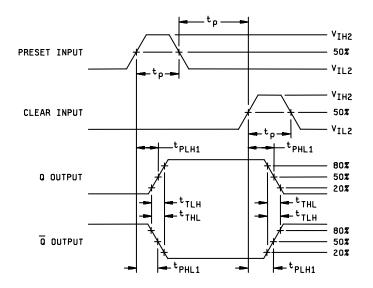
- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 3. F_{MAX} test circuit for device types 01 and 02.



T_C	V_{IH2}	V_{IL2}
	±10 mV	±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

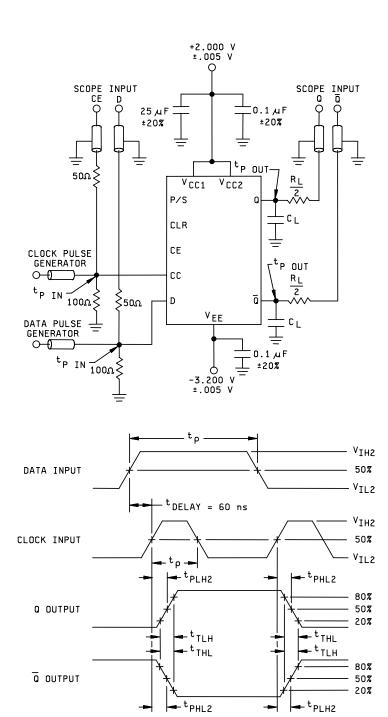




- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

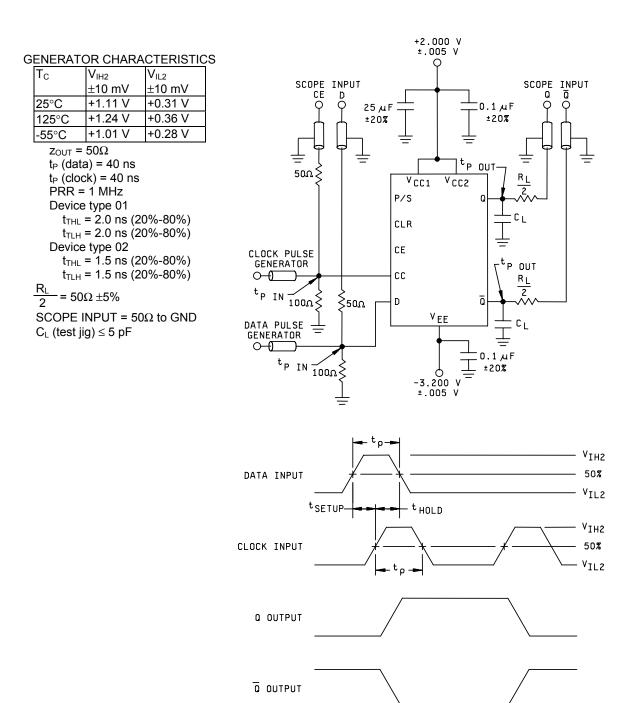
FIGURE 4. Preset and clear switching test circuit for device types 01 and 02.

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	T _C	V_{IH2}	V_{IL2}									
		±10 mV	±10 mV									
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	25°C	+1.11 V	+0.31 V									
$z_{OUT} = 50\Omega$ t_P (data) = 150 ns t_P (clocka) = 40 ns PRR = 1 MHz Device type 01 $t_{THL} = 2.0$ ns (20%-80%) $t_{TLH} = 2.0$ ns (20%-80%) Device type 02 $t_{THL} = 1.5$ ns (20%-80%) $t_{TLH} = 1.5$ ns (20%-80%) $t_{TLH} = 50\Omega \pm 5\%$ SCOPE INPUT = 50 Ω to GND	125°C											
$\begin{array}{l} t_{P} (data) = 150 \text{ns} \\ t_{P} (clocka) = 40 \text{ns} \\ PRR = 1 \text{MHz} \\ Device type 01 \\ t_{THL} = 2.0 \text{ns} (20\%\text{-}80\%) \\ t_{TLH} = 2.0 \text{ns} (20\%\text{-}80\%) \\ Device type 02 \\ t_{THL} = 1.5 \text{ns} (20\%\text{-}80\%) \\ t_{TLH} = 1.5 \text{ns} (20\%\text{-}80\%) \\ \hline \frac{R_{L}}{2} = 50\Omega \pm 5\% \\ SCOPE \text{INPUT} = 50\Omega \text{to} \text{GND} \end{array}$	-55°C	+1.01 V	+0.28 V									
$t_{\rm P}$ (clocka) = 40 ns PRR = 1 MHz Device type 01 $t_{\rm THL}$ = 2.0 ns (20%-80%) $t_{\rm TLH}$ = 2.0 ns (20%-80%) Device type 02 $t_{\rm THL}$ = 1.5 ns (20%-80%) $t_{\rm TLH}$ = 1.5 ns (20%-80%) $\frac{R_{\rm L}}{2}$ = 50Ω ±5% SCOPE INPUT = 50Ω to GND	$z_{OUT} = 50\Omega$											
PRR = 1 MHz Device type 01 t_{THL} = 2.0 ns (20%-80%) t_{TLH} = 2.0 ns (20%-80%) Device type 02 t_{THL} = 1.5 ns (20%-80%) t_{TLH} = 1.5 ns (20%-80%) $\frac{R_L}{2}$ = 50 Ω ±5% SCOPE INPUT = 50 Ω to GND	t _P (data	a) = 150 ns										
Device type 01 $t_{THL} = 2.0 \text{ ns } (20\%-80\%)$ $t_{TLH} = 2.0 \text{ ns } (20\%-80\%)$ Device type 02 $t_{THL} = 1.5 \text{ ns } (20\%-80\%)$ $t_{TLH} = 1.5 \text{ ns } (20\%-80\%)$ $\frac{R_L}{2} = 50\Omega \pm 5\%$ SCOPE INPUT = 50 Ω to GND	t _P (cloc	ka) = 40 ns	;									
$t_{THL} = 2.0 \text{ ns } (20\%-80\%)$ $t_{TLH} = 2.0 \text{ ns } (20\%-80\%)$ Device type 02 $t_{THL} = 1.5 \text{ ns } (20\%-80\%)$ $t_{TLH} = 1.5 \text{ ns } (20\%-80\%)$ $\frac{R_L}{2} = 50\Omega \pm 5\%$ SCOPE INPUT = 50 Ω to GND	PRR =	1 MHz										
$t_{TLH} = 2.0 \text{ ns } (20\%-80\%)$ Device type 02 $t_{THL} = 1.5 \text{ ns } (20\%-80\%)$ $t_{TLH} = 1.5 \text{ ns } (20\%-80\%)$ $\frac{R_L}{2} = 50\Omega \pm 5\%$ SCOPE INPUT = 50Ω to GND	Device	type 01										
Device type 02 t_{THL} = 1.5 ns (20%-80%) t_{TLH} = 1.5 ns (20%-80%) $\frac{R_L}{2}$ = 50 Ω ±5% SCOPE INPUT = 50 Ω to GND												
t_{THL} = 1.5 ns (20%-80%) t_{TLH} = 1.5 ns (20%-80%) $\frac{R_L}{2}$ = 50 Ω ±5% SCOPE INPUT = 50 Ω to GND	t_{TLH} :	= 2.0 ns (20)%-80%)									
t_{TLH} = 1.5 ns (20%-80%) $\frac{R_L}{2}$ = 50 Ω ±5% SCOPE INPUT = 50 Ω to GND	Device	type 02										
$\frac{R_L}{2}$ = 50 Ω ±5% SCOPE INPUT = 50 Ω to GND	t _{THL} :	= 1.5 ns (20)%-80%)									
$2^{-50\Omega \pm 5\%}$ SCOPE INPUT = 50Ω to GND	t_{TLH} :	= 1.5 ns (20)%-80%)									
	$\frac{R_L}{2}$ = 509	Ω ±5%										
C _L (test jig) ≤ 5 pF			Ω to GND									
	C _L (test ji	g) ≤ 5 pF										



- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 5. Synchronous switching test circuit for device types 01 and 02.



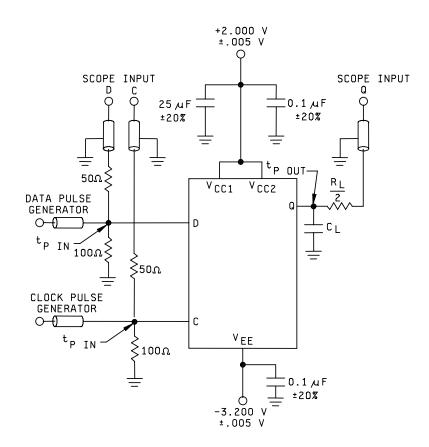
- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_0 in to input pin and t_0 out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

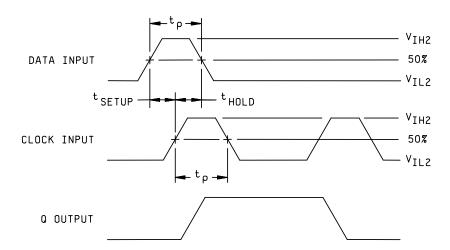
FIGURE 6. Setup and hold test circuit for device types 01 and 02.

T_C	V_{IH2}	V_{IL2}
	±10 mV	±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

$$\begin{split} z_{OUT} &= 50\Omega \\ t_{THL} &= 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{TLH} &= 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{P} \text{ (data)} &= 40 \text{ ns} \\ t_{P} \text{ (clock)} &= 40 \text{ ns} \\ PRR &= 1 \text{ MHz} \end{split}$$

$$\frac{R_L}{2}$$
 = 50 Ω ±5%
SCOPE INPUT = 50 Ω to GND
 C_L (test jig) \leq 5 pF





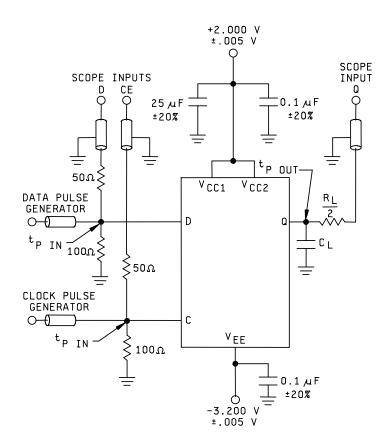
- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

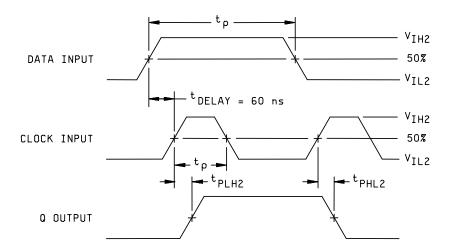
FIGURE 7. Setup and hold test circuit for device type 03.

T _C	V_{IH2}	V_{IL2}
	±10 mV	±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

$$z_{OUT}$$
 = 50 Ω
 t_{THL} = 2.0 ns (20%-80%)
 t_{TLH} = 2.0 ns (20%-80%)
 t_{P} (data) = 150 ns
 t_{P} (clock) = 40 ns
PRR = 1 MHz

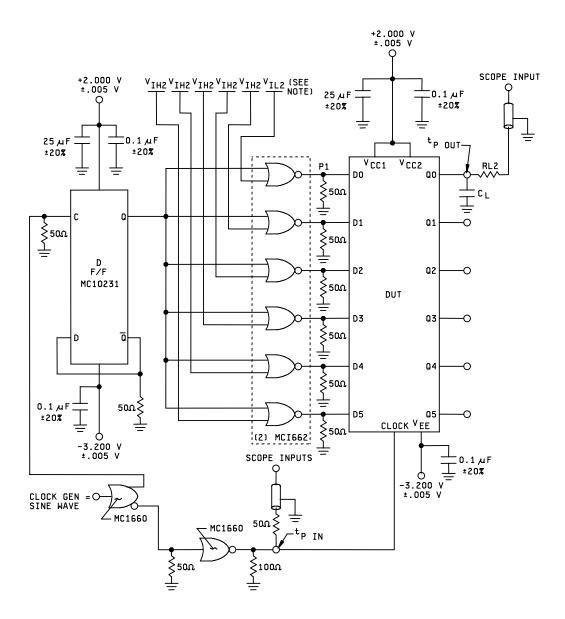
$$\frac{R_L}{2}$$
 = 50 Ω ±5%
SCOPE INPUT = 50 Ω to GND
 C_L (test jig) \leq 5 pF





- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_0 in to input pin and t_0 out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 8. Synchronous switching test circuit for device type 03.

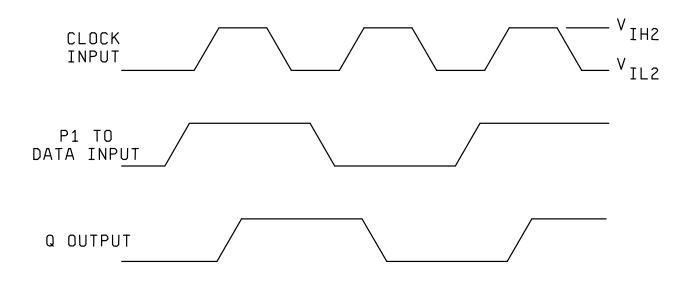


T _C	V _{IH2} ±10 mV	V _{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

All resistors $\pm 5\%$ $\frac{R_L}{2} = 50\Omega \pm 5\%$ SCOPE INPUT = 50Ω to GND C_L (test jig) ≤ 5 pF

NOTE: The flip-flop under test will have a " V_{IL2} " applied to the NOR gate and the remaining Nor gates will have a " V_{IH2} " applied.

FIGURE 9. F_{MAX} test circuit for device type 03.



 $\label{eq:freq} \text{FREQ. (OUT)} = \frac{\text{FREQ (IN)}}{2}$ FMAX IS HIGHEST INPUT FREQUENCY AT WHICH DEVICE CEASES TO TOGGLE

Tc	V _{IH2}	V _{IL2}
	±10 mV	±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

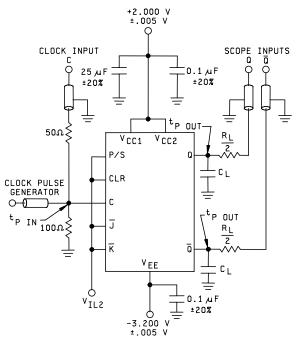
 $\begin{array}{l} z_{OUT} = 50\Omega \\ t_{THL} = 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{TLH} = 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{P} \text{ (data)} = 200 \text{ ns} \\ t_{P} \text{ (clock)} = 40 \text{ ns} \\ \end{array}$

- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_D in to input pin and t_D out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.
- 5. Power supply configuration on MC1660 and MC1662's identical to D.U.T.

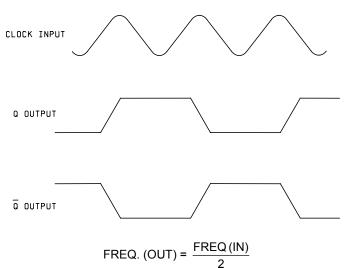
FIGURE 9. F_{MAX} test circuit for device type 03 - Continued.

T_C	V_{IH2}	V_{IL2}
	±10 mV	±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

$$\frac{R_L}{2}$$
 = 50 Ω ±5%
SCOPE INPUT = 50 Ω to GND C_L (test jig) \leq 5 pF



CLOCK INPUT = SINE WAVE



FMAX IS HIGHEST INPUT FREQUENCY AT WHICH DEVICE CEASES TO TOGGLE

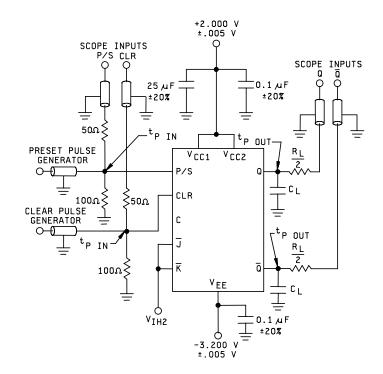
- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

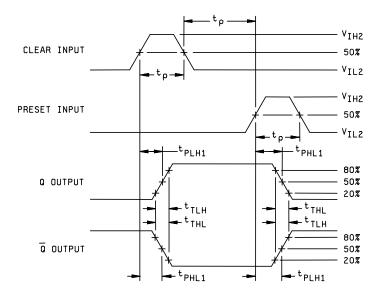
FIGURE 10. F_{MAX} test circuit for device type 04.

٦	Гс	V_{IH2}	V_{IL2}
		±10 mV	±10 mV
2	25°C	+1.11 V	+0.31 V
1	25°C	+1.24 V	+0.36 V
-	55°C	+1.01 V	+0.28 V

$$\begin{array}{l} z_{OUT} = 50\Omega \\ t_{THL} = 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{TLH} = 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{P} \text{ (P/S \& CLR)} = 40 \text{ ns} \\ PRR = 1 \text{ MHz} \end{array}$$

$$\frac{R_L}{2}$$
 = 50 Ω ±5%
SCOPE INPUT = 50 Ω to GND
 C_L (test jig) \leq 5 pF





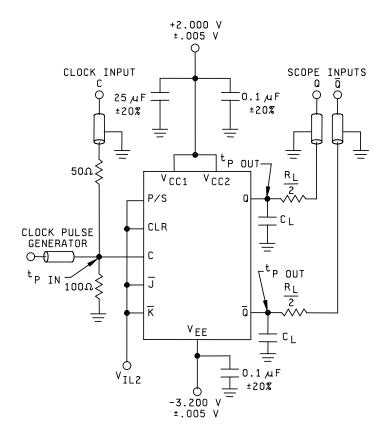
- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

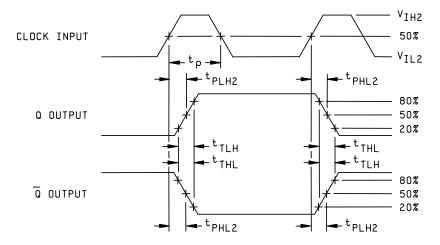
FIGURE 11. Preset and clear switching test circuit for device type 04.

T _C	V _{IH2}	V_{IL2}
	±10 mV	±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

$$\begin{split} z_{OUT} &= 50\Omega \\ t_{THL} &= 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{TLH} &= 2.0 \text{ ns } (20\%\text{-}80\%) \\ t_{P} \text{ (clock)} &= 40 \text{ ns} \\ PRR &= 1 \text{ MHz} \end{split}$$

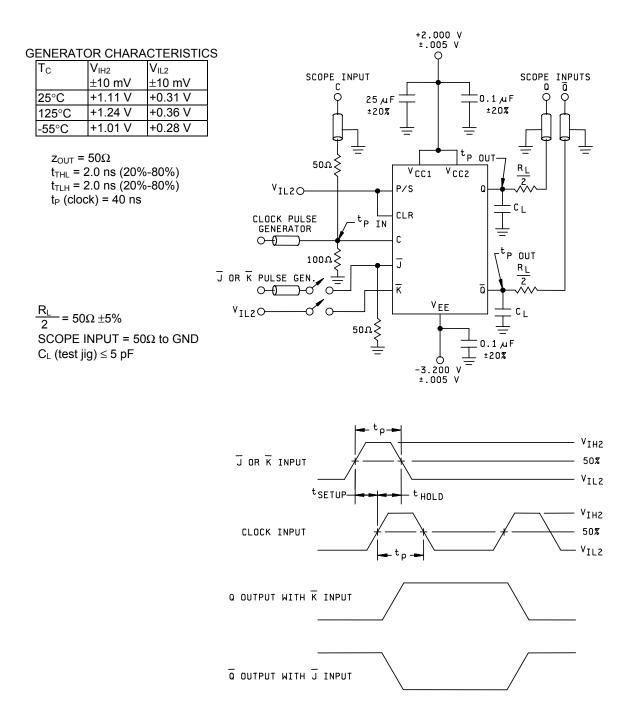
 $\frac{R_L}{2}$ = 50 Ω ±5% SCOPE INPUT = 50 Ω to GND C_L (test jig) \leq 5 pF





- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 12. Synchronous test circuit for device type 04.



- 1. Perform test in accordance with test table; each output is tested separately.
- 2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be \leq .250 (6.35 mm) from t_D in to input pin and t_D out to output pin.
- 3. Outputs not under test connected to a 100 ohm resistor to ground.
- 4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 13. Setup and hold test circuit for device type 04

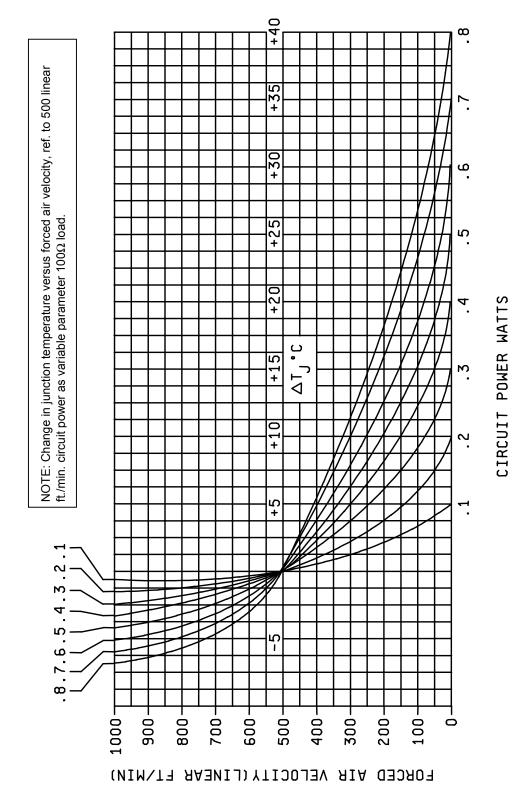


FIGURE 14. Junction temperature versus air velocity case E.

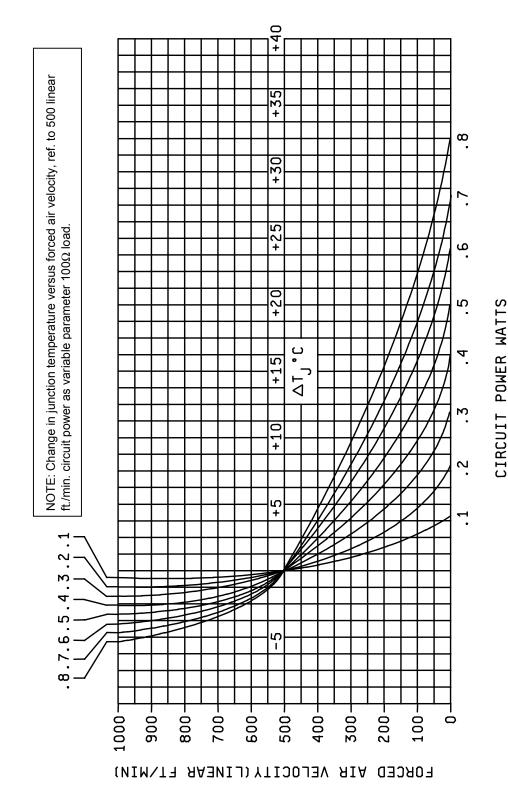
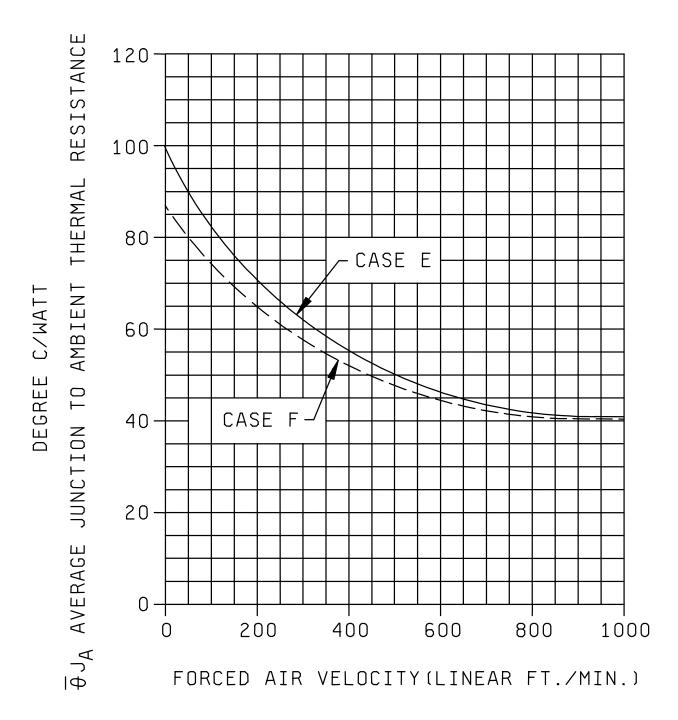


FIGURE 15. Junction temperature versus air velocity case F.

	-55 (mV	5°C //°C)	+25 (mV	5°C /°C)	+125°C (mV/°C)				
Parameter	+∆T _J	-∆T _J	+∆T _J	-ΔT _J	+∆T _J	-ΔT _J			
V _{OH} max, V _{IH1}	1.25	1.25	1.50	1.25	1.50	1.50			
V _{OH} min, V _{OTH}	1.88	1.88	1.05	1.88	1.05	1.05			
V _{OL} max, V _{OTL}	0.44	0.44	0.75	0.44	0.75	0.75			
V _{OL} min, V _{IL}	0.88	0.88	0.30	0.88	0.30	0.30			
V _{ITH}	1.88	1.88	1.05	1.88	1.05	1.05			
V _{ITL}	0.44	0.44	0.75	0.44	0.75	0.75			

FIGURE 16. Adjustment coefficients for forcing function and test limit compensation.



Note: $(\theta J_A - vs - Forced air velocity for case (E) and (F).$ $T_J = T_C + \theta J_A X P_D (max).$

FIGURE 17. Air velocity versus thermal resistance.

TABLE III. Group A inspection for device type 01. For terminal conditions see table IIIA

		For terminal conditions see table IIIA																					
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				İ
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				İ
Subgroup	Symbol	883 method	Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured terminal	Lim	its	Unit
			Test no.	V _{CC1}	1Q	1 Q	1CLR	1P/S	1CE	1D	V _{EE}	CC	2D	2CE	2P/S	2CLR	2 Q	2Q	V _{CC2}		Min	Max	1
1	V _{OH}	3006	1	GND	Α	Α	V_{IL1}	V _{IH1}	V _{IL1}	V _{IL1}	-5.2 V	V _{IL1}	V _{IL1}	V _{IL1}	V_{IH1}	V _{IL1}	Α	Α	GND	1Q	93	78	V
Tc = 25°C			2				V_{IL1}	V _{IH1}							V_{IH1}	V_{IL1}				2Q			
		"	3	. "	. "	"	V_{IH1}	V _{IL1}	"	. "	"	"	"	. "	V _{IL1}	V _{IH1}	. "	. "	. "	1 Q	"	"	. "
			4	"	"	"			"		"	"	"	"	"	"		"		2 Q	"	"	
2		Same tests										•	•	•	•			•			825	63	V
3		Same tests			tions as fo	r subgroup	1, except	Tc = -55°	C and limi	ts as show											-1.08	88	V
1	V _{OL}	3007	5	GND	A	A	V _{IH1}	V _{IL1}	V _{IL1}	V _{IL1}	-5.2 V	V _{IL1}	V _{IL1}	V _{IL1}	V _{IL1}	V _{IH1}	A	A	GND	1Q	-1.85	-1.62	٧
Tc = 25°C			6 7												 ./					2Q _			
				_	_	_	V _{IL1}	V _{IH1}	_		_	_	_	_	V _{IH1}	V _{IL1}		_		1 Q	_	_	1 _
			8		"	"					"			"	"		. "	"	"	2 Q			
2		Same tests	and termi	nal condi	tions as fo	r subgroup	1, except	Tc = 125°	C and lim	its as show	wn.										-1.82	-1.545	V
3	L	Same tests		nal condi								.,	.,						LONE	10	-1.92	-1.655	V
1	V _{OTH}		9 10	GND	A	A	V _{IL1}	V _{IH1}	V _{IL1}	V _{IL1}	-5.2 V	V _{IL1}	V _{IL1}	V _{IL1}	V _{IH1}	V _{IL1}	A	A	GND "	1Q	95		\
Tc = 25°C			11				V _{ITH}	V _{IL1}							V _{IL1}	V_{ITH}				2Q			
								VIL1							VIL1					1 Q			
			12				V _{ITH}									V _{ITH}	, ,			2 Q			
			13	"	"	"	V_{IL1}				"			"		V _{IL1}	"	"		1 Q			. "
			14		"	"			"	"	"		"	"	"	"	"	"		2 Q	"		
			15					V _{ITL}					"		V_{ITL}					1 Q			
			16					V _{ITL}							V _{ITL}								
																				2 Q			I
			17					V _{ITH}							V _{ITH}					1Q			
			18 19					V _{ITH}							V _{ITH}					2Q 1Q			
			20					V _{IL1}					"		V _{IL1}					2Q	"		
			21		"	"	V _{ITL}		"	"	"	"	"	"	"	V _{ITL}	"	"	"	1Q	"		
			22		"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q	"		. "
			23 24				V _{IL1}	V _{ITH}					"		V _{ITH}	V _{IL1}				1Q			
			25	-					V _{IH1}			V _{IH1}		V _{IH1}						2Q 1Q			
			26		"				V _{IH1}			V _{IH1}	"	V _{IH1}				"		2Q	"		
			27		"	"	V_{IH1}	V_{IL1}	V _{IL1}	"	"	V _{IL1}	"	V _{IL1}	V_{IL1}	V_{IH1}	"	"	"	1 Q	"		
			28		"		V _{IH1}							"		V _{IH1}		"		_			
										.,			.,							2 Q			
			29				V_{IL1}			V _{ITH}		-	V _{ITH}		-	V _{IL1}		-		1 Q			i
			30		"	"			"	"	"	"	"	"	"	"	"	"	"	2 o	"		. "
			31						V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"			"		1 Q			
			32						V_{ITL}			$V_{\rm ITL}$		V_{ITL}						2 Q			
			33						V _{ITH}		"	V _{ITH}		V _{ITH}	"			"		1Q			
			34		"	"			VITH	"	"	V _{ITH}	"	V _{ITH}	"			"		2Q			"
			35	"	"	"			V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	1Q			
			36	- "	- "	- "			V _{IL1}	- "		V _{IL1}	- "	V _{IL1}	- "	- "	- "	- "	"	2Q			
			37 38						V _{ITL}			V _{ITL}		V _{ITL}						1Q 2Q			
			39						V _{ITL} V _{IL1}	V _{IH1}		V _{ITL} V _{IL1}	V _{IH1}	V _{ITL} V _{IL1}						2Q 1Q			
			40		"	"			V _{IL1}		"	V _{IL1}	, in	V _{IL1}	"			"		2Q	"		
			41	"	"	"	V _{IH1}	"	V _{IH1}	"	"	V _{IH1}	"	V _{IH1}	"	V _{IH1}	"	"	"	1 Q			
			42	"	"	"	V _{IH1}		V _{IH1}	"	"	V_{IH1}	"	V _{IH1}	"	V _{IH1}	"	"		2 Q			
2]	Same tests	and termi	nal condi	tions as fo	r subgroup	1, except	Tc = 125°	C and lim	its as show	wn.										845		V
3		Same tests	and termi	nal condi	tions as fo	r subgroup	1, except	Tc = -55°	C and limi	ts as show	vn.										-1.1		V

TABLE III. Group A inspection for device type 01 - Continued.

For terminal conditions see table IIIA

									F	or termi	nal con	ditions	see table	e IIIA									
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
		method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 o	1CLR	1P/S	1CE	1D	V _{EE}	CC	2D	2CE	2P/S	2CLR	2 o	2Q	V _{CC2}		Min	Max	
1	V _{OTL}		43	GND	Α	Α	V _{IL1}	V _{IH1}	V _{IL1}	V _{IL1}	-5.2 V	V _{IL1}	V _{IL1}	V _{IL1}	V _{IH1}	V _{IL1}	Α	Α	GND	1 Q		-1.6	V
Tc = 25°C	0.12		44																	_			
10 = 25 0							V _{IL1}	V_{IH1}							V _{IH1}	V _{IL1}				2 Q			
			45		"		V_{ITH}	V_{IL1}		"	"			"	V_{IL1}	V _{ITH}	"	"	"	1 Q			"
			46		"		V_{ITH}			"	"			"	"	V_{ITH}		"	"	2 o			"
			47	"	"		V _{IL1}			"				"	"	V _{IL1}		"	"	1Q			
			48		"		"		"	"	"		"		"	"	"	"		2Q			"
			49	"	"	"	"	V_{ITL}		"	"			"	V_{ITL}			"	"	1Q			
			50		"	"	"	V _{ITL}	"	"	- "	-	-		V _{ITL}					2Q			
			51 52					V_{ITH}							V _{ITH} V _{ITH}					1Q 2Q			
			53					V _{IL1}							V _{IL1}					1 0			"
			54																				
																				2 Q			
			55		"		V _{ITL}		"	"	"	"		"	. "	V_{ITL}	"	. "	. "	1 Q			"
			56		"	"	V_{ITL}		"	"	"		"	"	"	V_{ITL}	"	"	"	2 Q			"
			57				V _{IL1}	V_{ITH}			"				V_{ITH}	V_{IL1}				_			
			58				"									"				1 Q			44
																				2 Q			
			59		"		"		V_{IH1}	"	"	V_{IH1}		V_{IH1}	"	"	"	"	"	1 Q			"
			60		"				V_{IH1}		"	V_{IH1}	"	V_{IH1}	"	"		"	"	2 o			
			61				V _{IH1}	V _{IL1}	V _{IL1}			V _{IL1}		V _{IL1}	V _{IL1}	V _{IH1}				1Q			
			62		"		V _{IH1}	"IL1	V IL1	"	"	"IL1		V IL1	VIL1	V _{IH1}		"		2Q			
			63		"	"	V _{IL1}	"		V_{ITH}	"	"	V _{ITH}	"	"	V _{IL1}	"	"	"	1Q			**
			64		".			:	.,"			."		."						2Q			
			65 66						V _{ITL} V _{ITL}			V _{ITL} V _{ITL}		V _{ITL} V _{ITL}						1Q 2Q			
			67		"				V _{ITH}	"	"	V _{ITH}	"	V _{ITH}		"							
			68																	1 Q -			"
									V_{ITH}			V _{ITH}		V _{ITH}						2 Q			
			69		. "				V_{IL1}	V _{IL1}	. "	V_{IL1}	V_{IL1}	V _{IL1}	. "	. "		. "	. "	1 a			
			70		"		"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	2 Q			"
			71		"				V _{ITL}	"	"	V _{ITL}	"	V _{ITL}		"							
			72																	1 Q			
									V _{ITL}			V _{ITL}		V _{ITL}						2 Q			
			73		"	"	"	"	V_{IL1}	V _{IH1}	"	V _{IL1}	V _{IH1}	V _{IL1}	"	"	"	"	"	1 Q			"
			74		"				V_{IL1}	"	"	V _{IL1}		V _{IL1}	"	"		"	"	2 Q			"
			75		"		V _{IH1}		V _{IH1}	"		V _{IH1}		V _{IH1}		V _{IH1}				1Q			
			76		"		V _{IH1}		V _{IH1}	"	"	V _{IH1}	"	V _{IH1}	"	V _{IH1}		"	"	2Q			
2		Same tests					1, except		°C and lim													-1.525	V
3		Same tests			tions as fo	r subgroup	1, except	Tc = -55°	C and limi	ts as show			-									-1.635	V
1	I _{EE}	3005	77	GND							-5.2 V								GND	V _{EE}	-56		mA
Tc = 25°C	ł	Cama tasta	and tarreit	anl nond:	tions as fa	r oubarc	1 00000	To = 105	C and E-	ito ao abar	L			<u> </u>	<u> </u>		1	<u> </u>	<u> </u>		-62		
3	1	Same tests Same tests																			-62		
1	I _{IH1}	3010	78	GND	as 10	a subgroup	, i, cacept		V _{IH1}	as 3110W	-5.2 V								GND	1CE	72	220	μА
Tc = 25°C	ini	"	79	"					mi		"			V _{IH1}					"	2CE		220	" "
2	1	Same tests	and termin	nal condi	tions as fo	or subgroup	o 1, except	Tc = 125	°C and lim	its as sho	wn.											375	"
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.										l	375	"									

TABLE III. Group A inspection for device type 01 - Continued. For terminal conditions see table IIIA

	Case E 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 MIL-STD- Case F 5 6 7 8 9 10 11 12 13 14 15 16 1 2 3 4																						
		MIL-STD-		5																			
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lin	nite	Unit
Oubgroup	Cyrribor	method	2		3	7	3	,	O	3	10	12	10		13	.,	10	13	20	terminal	Liii	iito	Offic
			Test no.	V _{CC1}	1Q	1 o	1CLR	1P/S	1CE	1D	V _{EE}	CC	2D	2CE	2P/S	2CLR	2 o	2Q	V _{CC2}		Min	Max	
1		3010	80	GND	-	ΙQ			_		-5.2 V					-	2 Q		GND	1CLR		330	
Tc = 25°C	I _{IH2}	3010	81	GIND "			V _{IH1}				-3.2 V					V _{IH1}			GND	2CLR		330	μ Α "
10 - 25 0			82					V_{IH1}								· IHI				1P/S			
		"	83	"							"				V_{IH1}				"	2P/S		"	
2		Same tests																				565	μΑ
3		Same tests			ions as fo	r subgroup	1, except	Tc = -55°	C and limit						ı	1	1		OND	45		565	μA
1 Tc = 25°C	I _{IH3}	3010	84 85	GND "						V _{IH1}	-5.2 V		V_{IH1}						GND "	1D 2D		245	μ Α "
2		Same tests		nal condit	ions as fo	r subarour	1 excent	Tc = 125°	C and limi	ts as show	vn		V IH1				l		l	20		420	μА
3		Same tests																				420	μА
1	I _{IH4}	3010	86	GND			,				-5.2 V	V_{IH1}							GND	CC		265	μA
Tc = 25°C																							
2	4	Same tests																			1	450	μA
3	III	Same tests 3009	and termii 87	nal condit GND	ions as foi	r subgroup	1, except	1C = -55°	c and limit	s as snow	/n. -5.2 V				l	1	1		GND	1CLR	0.5	450	μA μA
Tc = 25°C	'IL	"	88	"			V IL1	V_{IL1}			-3.2 V								UND.	1P/S	0.5		μΑ
		"	89					- 151	V _{IL1}		"								"	1CE			
		" "	90							V_{IL1}										1D			
			91 92										V_{IL1}	V _{IL1}						2D 2CE			
			93											V IL1	V _{IL1}					2P/S			
		"	94								"					V_{IL1}			"	2CLR			"
			95	L."								V_{IL1}							"	CC	"		
3		Same tests																			0.3		μA
9	F _{MAX}	Same tests Fig 3	and termi 96	+2.0 V	OUT	r subgroup B	1, except	1C = -55°	IN		-3.2 V						В	В	+2.0 V	1Q	62.5		μA MHz
-	· MAX		97	.2.0 0	В					Q 1	0.2 *		_	15.1				OUT	12.0 V				"
Tc = 25°C		Fig 3	97		В								_ Q 2	IN				001	-	2Q	62.5		-
10		Same tests																			62.5		MHz
11		Same tests							C and limi	ts as show					ı	T			1001/		52.5	4.5	MHz
9	t _{TLH}	3004	98	+2.0 V	В	OUT	IN	IN			-3.2 V						В	В	+2.0 V	1 Q	1.1	4.5	ns
Tc = 25°C		Fig 4	99		OUT	В	IN	IN									" 0.1.T			1Q			
			100		В										IN	IN	OUT			2 Q			
			101	"	"	"					"				IN	IN	В	OUT	"	2Q			
		Fig 5	102 103		OUT B	OUT			IN IN	IN IN								B "		1Q			
										*	۱.,		18.1					OUT		1 Q	۱	.	
			104 105			В "							IN IN	IN IN			OUT	OUT B		2Q 2 _			
40																	001			2 Q		4.0	
10 11		Same tests																			1.1	4.9 4.6	ns ns
9	t _{THL}	Same tests 3004	and termir 106	+2.0 V	OUT	r subgroup B	9, except	IC = -55°	c and iimii	.5 d5 SHOW	n. -3.2 V						В	В	+2.0 V	1Q	1.0	4.5	ns
Tc = 25°C	THL	Fig 4	107	"	В	OUT	IN	IN			"						"	-	" "	1 0	"	"	"
		"	108			В									IN	IN		OUT		2Q			
		"	109		"	"					"				IN	IN	OUT	В	"	2 Q 2 Q			
		Fig 5	110		OUT				IN	IN							В		"	1Q			
		Fig 5	111		В	OUT			IN	IN							"			1 Q			
			112			В							IN	IN				OUT		2Q			
		"	113			"							IN	IN			OUT	В	"	2 Q 2 Q			
10	-	Como tosto		nol condi	tions as fo	r oubarc	0 0000	To = 105	C and E-	ito oo ob o	<u> </u>			l		1				2 Q	1.1	4.9	ns
11		Same tests Same tests																			1.0	4.9	ns
<u> </u>		Carric (CSIS	una (CIIIII	nai condi	as 10	, Junyiou	, o, cacept		o and mill	as 3110V	*11fe										1.0	7.0	110

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TABLE III. Group A inspection for device type 01 - Continued.

For terminal conditions see table IIIA

	For terminal conditions see table IIIA Case E 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 MIL-STD- Case E 5 6 7 8 9 10 11 12 13 14 15 16 1 2 3 4																						
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				'
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
		method	2																	terminal			1
			Test no.	V _{CC1}	1Q	1 0	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	2 0	2Q	V_{CC2}	1	Min	Max	
9	t _{PI H1}	3003	114	+2.0 V	В	OUT	IN	IN			-3.2 V						B	В	+2.0 V	1 o	1.2	4.3	ns
-	PLHI			. 2.0	_						0.2 1								12.0 0				
Tc = 25°C		Fig 4	115 116		OUT	B	IN	IN							IN	IN	OUT			1Q _			
		_				_														2 Q	_	_	
10		. "	117	. "	. "	<u>"</u>		T 4050	0 111						IN	IN	В	OUT		2Q	1.0		
10 11		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown. Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.															1.2	4.9 4.5	ns				
9																	1.1 1.5	4.5	ns				
Tc = 25°C	t _{PLH2}	Fig 4	119	+2.0 V	B	OUT			IN	IN	-3.2 V						В.	В "	+2.0 V	_	1.5	4.5	ns "
10 - 25 0		9 .											18.1	18.1				OUT		1 Q			
			120			B							IN	IN			OUT	OUT		2Q			
		" 121 " " " " N IN OUT B " 2\overline{-\chinal{2}}																					
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown. Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.															1.5	5.0	ns				
11									C and limit	s as show											1.4	4.6	ns
9	t _{PHL1}	3003	122	+2.0 V	OUT B	B OUT	IN	IN			-3.2 V						В	В	+2.0 V	1Q	1.2	4.3	ns "
Tc = 25°C		Fig 5	123	-	В	001	IN	IN									-			1 Q		-	
			124	"	"	В									IN	IN		OUT	"	2Q			
			125	"		"					"				IN	IN	OUT	В	"	2 Q		"	"
10	1	Same tests	and termin	nal condit	ions as fo	r subgroup	9, except	Tc = 125°	C and limi	ts as show	vn.							•			1.2	4.9	ns
11		Same tests	and termir	nal condit	tions as fo	r subgroup	9, except	Tc = -55°0	C and limit	s as show	'n.										1.1	4.5	ns
9	t _{PHL2}	3003	126	+2.0 V	OUT	В			IN	IN	-3.2 V						В	В	+2.0 V	1Q	1.5	4.5	ns
Tc = 25°C		Fig 5	127		В	OUT			IN	IN	"							"	"	1 Q		"	"
			128			В					"		IN	IN				OUT	"	2Q			
		"	129			"							IN	IN			OUT	В	"	2 o		"	"
10		Same tests	and termin	nal condi	tions as fo	r subarout	9. except	Tc = 125°	C and lim	its as show	vn.			l .	l .	1			1		1.5	5.0	ns
11	i	Same tests																			1.4	4.6	ns
-							., ттор.																

TABLE III. Group A inspection for device type 02. For terminal conditions see table IIIA

													see lable										
		MIL OTD	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			,	
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4			,	
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
		method	2																	terminal		,	
			Test no.	V _{CC1}	1Q	4.7	1CLR	1P/S	1CE	1D	V _{EE}	CC	2D	2CE	2P/S	2CLR	2 0	2Q	V _{CC2}		Min	Max	
						1 Q																	
1	V _{OH}	3006	1	GND	Α	Α	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	Α	Α	GND	1Q	93	78	V
Tc = 25°C			2	. "	. "		V_{IL1}	V_{IH1}	"		:				V _{IH1}	V_{IL1}	"			2Q		ı "	
			3	. "	. "		V_{IH1}	V_{IL1}	"					. "	V_{IL1}	V_{IH1}	"		. "	1 Q		1 "	
			4					"		"				"			"			2 Q	"		
																				2 Q			
2		Same tests																			825	63	V
3		Same tests			tions as fo	r subgroup	1, except	Tc = -55°	C and limit	ts as show					_						-1.08	88	V
1	V _{OL}	3007	5	GND	Α	Α	V_{IH1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	Α	Α	GND	1Q	-1.85	-1.62	V
Tc = 25°C			6		. "		"	"							"					2Q		1 "	
		"	7	. "	. "	"	V_{IL1}	V_{IH1}	"	"		"		"	V_{IH1}	V_{IL1}		. "	. "	1 Q	"	1 " 1	
			8		"	"				"				"			"			2 Q	"		
	_																			2 Q			
2	_	Same tests																			-1.82	-1.545	V
3		Same tests								ts as show											-1.92	-1.655	V
1	V_{OTH}		9	GND	A	A	V_{IL1}	V_{IH1}	$V_{\rm IL1}$	V _{IL1}	-5.2 V	V _{IL1}	V_{IL1}	V _{IL1}	V _{IH1}	V _{IL1}	A	A	GND	1Q	95	1 1	٧
Tc = 25°C			10	l ".				."	ä.			ä.			,,"	. "			l :	2Q		1 1	
			11				V_{ITH}	V_{IL1}							V_{IL1}	V_{ITH}				1 Q		1 1	
			12				V_{ITH}		"				"		"	V_{ITH}		"	"	2 Q		1	"
			40					-											.	- L U		1 1	
			13				V _{IL1}	-				-				V _{IL1}	-	-		1 Q		1 1	
			14	"	"	"		"	"	"		"		"		"	"		"	2 o	"	1 1	
			15					V							V							1 1	
			13					V_{ITL}							V _{ITL}					1 Q		1 1	
			16	"	"	"		V_{ITL}	"	"		"	"	"	V_{ITL}	"	"	"	"	2 o	"	1	"
			17					V _{ITH}					"		V _{ITH}	"			"	1Q		1	
			18					V _{ITH}							VITH			"		2Q		1	"
			19					V _{IL1}							V _{IL1}	"				1Q	"	1 1	
			20					, IL1							, IL1					2Q		1 1	
			21		"		V _{ITL}							"	"	V _{ITL}				1Q		1 1	
			22		"	"	V _{ITL}	"						"		V _{ITL}				2Q	"	1 1	
			23	"	"	"	V _{IL1}	V_{ITH}	"	"		"	"	"	V_{ITH}	V _{IL1}	"	"	"	1Q	"	1	"
			24	"	"	"		"	"	"		"	"	"	"	"	"	"	"	2Q	"	1	"
			25	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}		V_{IH1}	"	"	"		"	1Q	"	1 1	
			26		"			. "	V_{IH1}			V_{IH1}		V_{IH1}						2Q		1 1	
			27	. "	. "	"	V_{IH1}	V_{IL1}	V_{IL1}	"		V_{IL1}	"	V_{IL1}	V_{IL1}	V _{IH1}		"	"	1 o	"	1	"
			28		"	"	V_{IH1}	"		"			"	"	"	V_{IH1}	"	"	"	2 Q	"	1	"
										.,			.,,							2 Q		1 1	
			29				V_{IL1}			V_{ITH}			V_{ITH}			V_{IL1}				1 Q		1	
1			30	"	"	"	"								"				"	2 o			
1			31						V			V		V						_			
1			l	1	1				V_{ITL}			V_{ITL}		V _{ITL}	1				1	1 Q			
1			32	"	"	"	"		V_{ITL}			V_{ITL}	"	V_{ITL}	"	"		"	"	2 Q	"		"
			33		"				V			V	"	V	"				"	1Q		1	
			34						V _{ITH} V _{ITH}			$V_{\rm ITH}$ $V_{\rm ITH}$		V_{ITH}	"					2Q		1 1	"
1			35	"	"				V _{IL1}	V _{IL1}		V _{IL1}	V_{IL1}	V _{IL1}				"		1Q	"		"
			36	"	"	"			V _{II 1}	"		V _{II 1}	- 112.1	V _{II 1}	"			"		2Q	"		"
1			37	"		"	"	"	V _{ITL}		"	V _{ITL}		V _{ITL}	"	"	"	"	"	1Q	"		"
			38	"	"	"	"	"	V _{ITL}	"	"	V _{ITL}	"	V _{ITL}	"	"	"	"	"	2Q	"		"
			39	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	1Q	"	1	"
			40	"	"	"		"	V_{IL1}			V_{IL1}	"	V_{IL1}	"	"	-		"	2Q	"	1	"
			41	. "	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V _{IH1}	"	"	"	1 Q	"	1	"
			42				V _{IH1}		V _{IH1}			V _{IH1}		V _{IH1}		V _{IH1}				2 Q		1	
	1											• 1011		* 1111		• 1171				∠ Q			
2	1	Same tests																			845	ldot	V
3		Same tests	and termin	nal condi	tions as fo	r subgroup	1, except	Tc = -55°	C and limit	ts as show	n.										-1.1		V

TABLE III. Group A inspection for device type 02 - Continued.

For terminal conditions see table IIIA

									F	or termi	nai con	ditions	see table	HIA									
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
		method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 Q	1CLR	1P/S	1CE	1D	V _{EE}	CC	2D	2CE	2P/S	2CLR	2 o	2Q	V _{CC2}		Min	Max	
1	V _{OTL}		43	GND	Α	Α	V _{IL1}	V _{IH1}	V _{IL1}	V _{IL1}	-5.2 V	V _{IL1}	V _{IL1}	V _{IL1}	V _{IH1}	V _{IL1}	Α	Α	GND	1 Q		-1.6	V
T- 0500	012		44						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,											_			
Tc = 25°C							V _{IL1}	V_{IH1}							V _{IH1}	V _{IL1}				2 Q			
			45	"		"	V_{ITH}	V_{IL1}		"	"		"	"	V_{IL1}	V _{ITH}	"	"	"	1 Q		"	"
			46		"	"	V_{ITH}		"	"	"		"	"	"	V_{ITH}	"	"	"	2 o		"	"
			47				V _{IL1}			"						V _{IL1}		"	"	1Q			
			48				"			"	"			"	"	"		"		2Q			44
			49		"	"	"	V_{ITL}	"	"	"		"	"	V_{ITL}			"	"	1Q			
			50			"	"	V _{ITL}		"	- "	-		- "	V _{ITL}					2Q			
			51 52					$V_{\rm ITH}$							V _{ITH} V _{ITH}					1Q 2Q			
			53					V _{IL1}							V _{IL1}					1 0			"
			54												"								
																				2 Q			
			55	•			V_{ITL}			"	"			"	"	V_{ITL}	"	. "	. "	1 Q		"	"
			56		"	"	V_{ITL}		"	"	"		"	"	"	V_{ITL}	"	"	"	2 Q		"	"
			57				V _{IL1}	V_{ITH}			"				V _{ITH}	V_{IL1}				_			"
			58				"								"	"				1 Q			4
																				2 Q			
			59				"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	1 Q		"	"
			60						V_{IH1}		"	V_{IH1}	"	V_{IH1}	"			"	"	2 o		"	"
			61				V _{IH1}	V _{IL1}	V _{IL1}			V _{IL1}		V _{IL1}	V _{IL1}	V _{IH1}				1Q			
			62				V _{IH1}	"IL1	V IL1	"	"	V IL1		V IL1	V IL1	V _{IH1}		"		2Q			"
			63				V _{IL1}	"		V_{ITH}	"		V _{ITH}	"	"	V _{IL1}	"	"	"	1Q		"	"
			64						.,"			."		."						2Q			
			65 66						V _{ITL} V _{ITL}			V _{ITL} V _{ITL}		V _{ITL} V _{ITL}						1Q 2Q			
			67				"		V _{ITH}	"	"	V _{ITH}		VIII	"								"
			68																	1 Q -			"
					_	_			V _{ITH}			V _{ITH}		V _{ITH}	_					2 Q		_	_
			69						V_{IL1}	V_{IL1}	. "	V_{IL1}	V_{IL1}	V _{IL1}	"			. "	. "	1 a		"	"
			70		"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	2 Q		"	"
			71				"		V _{ITL}	"	"	V _{ITL}		V _{ITL}	"								"
			72																	1 Q			
									V _{ITL}			V _{ITL}		V _{ITL}						2 Q			
			73	"			"	"	V _{IL1}	V _{IH1}	"	V_{IL1}	V_{IH1}	V _{IL1}	"	"	"	"	"	1 Q		"	44
			74				"		V_{IL1}	"	"	V _{IL1}	"	V_{IL1}				"	"	2 Q			"
			75		"	"	V _{IH1}		V _{IH1}	"	-	V _{IH1}		V _{IH1}		V _{IH1}	-	-	"	1Q			
			76				V _{IH1}		V _{IH1}	"	"	V _{IH1}		V _{IH1}	"	V _{IH1}		"	"	2Q		"	"
2		Same tests					1, except		C and limi													-1.525	V
3		Same tests			tions as fo	r subgroup	1, except	Tc = -55°	C and limit	ts as show												-1.635	V
1	IEE	3005	77	GND							-5.2 V								GND	V _{EE}	-65		mA
Tc = 25°C	-	Como tosto	and tarreit	aal aandit	tions so fo	r oubarc	1 00000	To = 105	C and limi	ito ao abar	L				<u> </u>	1	1	<u> </u>	<u> </u>		-72		
3	1														-72								
1	I _{IH1}	3010	78	GND	10110 as 10	Jungious	, i, cacept		V _{IH1}	as 3110W	-5.2 V								GND	1CE	- · -	220	μА
Tc = 25°C		"	79	"					ini.		"			V _{IH1}					"	2CE		220	μ, ,
2		Same tests	and termin	nal condi	tions as fo	r subgroup	1, except	Tc = 125	°C and lim	its as sho	wn.											375	"
3		Same tests	and termin	nal condi	tions as fo	r subgroup	o 1, except	Tc = -55°	C and limi	ts as show	vn.											375	"

TABLE III. Group A inspection for device type 02 - Continued. For terminal conditions see table IIIA

		For terminal conditions see table IIIA Case E 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 MIL-STD- Case F 5 6 7 8 9 10 11 12 13 14 15 16 1 2 3 4																					
										7													
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	nits	Unit
	-	method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 o	1CLR	1P/S	1CE	1D	V _{EE}	CC	2D	2CE	2P/S	2CLR	2 o	2Q	V _{CC2}		Min	Max	
						ΙQ										_	Z Q						
1	I _{IH2}	3010	80	GND			V_{IH1}	.,			-5.2 V								GND	1CLR		410	μA
Tc = 25°C			81					V_{IH1}												1P/S			
			82 83												V _{IH1}	V _{IH1}				2P/S 2CLR			
2		Same tests		nal condit	ione as fo	r cubarour	1 except	To = 1259	C and limi	te ac chou	vn					V IH1				ZOLIN		700	μΑ
3		Same tests																				700	μΑ
1	I _{IH3}	3010	84	GND	10115 a5 101	Subgroup	т, ехсері	1055	C and mini	V _{IH1}	-5.2 V			1					GND	1D		220	μA
Tc = 25°C	'IH3	3010	85	UND "						V IH1	-5.2 V		V_{IH1}						UND "	2D		220	μΛ
2		Same tests		nal condit	ione as fo	r eubarour	1 evcent	Tc = 1259	C and limi	te ae ehov	vn		* 101	l .		1						375	μΑ
3		Same tests																				375	μΑ
1	I _{IH4}	3010	86	GND	10113 43 10	Jubgroup	, i, except	1000	C and min	3 43 3110W	-5.2 V	V_{IH1}							GND	CC		290	μΑ
Tc = 25°C	104	00.0	00	0.15							0.2 1	· IHI							0.15				μιτ
2		Same tests	and termin	nal condit	ions as fo	r subarour	1. except	Tc = 125°	C and limi	ts as show	vn.									L		495	μА
3		Same tests																				495	μА
1	I _{II}	3009	87	GND	10110 40 10	. casg.cap	V _{IL1}	.0 00	0 0.10 1.1111	0 40 0.101	-5.2 V								GND	1CLR	0.5		μΑ
Tc = 25°C			88					V_{IL1}												1P/S			r".
			89						V_{IL1}											1CE			"
			90							V_{IL1}	"									1D	"		"
			91										V_{IL1}							2D			
		:	92											V_{IL1}	.,					2CE			
			93 94												V _{IL1}	V _{IL1}				2P/S 2CLR			
			9 4 95									V _{II 1}				V IL1				CC			
2		Same tests		nal condi	tions as fo	r eubarour	1 evcent	Tc = 125	C and limi	te ae ehoi	wn	V IL1									0.3		μΑ
3		Same tests																			0.5		μΑ
9	F _{MAX}	Fig 3	96	+2.0 V	OUT	В	7 1, СХОСРІ	10 00	IN		-3.2 V						В	В	+2.0 V	1Q	100		MHz
	· WAX	•								Q 1	U.E 1												
Tc = 25°C		Fig 3	97		В								_ Q 2	IN				OUT		2Q	. "		
10		Same tests	and termi	nal condi	tions as fo	r subgroup	1, except	Tc = 125	C and lim	ts as show	vn.								•	•	100		MHz
11		Same tests	and termi	nal condi	tions as fo	r subgroup	1, except	Tc = -55°	C and limit	s as show	/n.										100		MHz
9	t _{TLH}	3004	98	+2.0 V	В	OUT	IN	IN			-3.2 V						В	В	+2.0 V	1 o	1.0	3.1	ns
Tc = 25°C		Fig 4	99		OUT	В	IN	IN												1Q			
10 - 25 0		1 19 4	100		В	"	IIN	IIN							IN	IN	OUT						
					Ь															2 Q			
		" _	101	-							"				IN	IN	В	OUT		2Q			
		Fig 5	102		OUT	OUT.			IN	IN					"			В		1Q			i i
			103		В	OUT			IN	IN										1 Q			
		"	104	"	"	В					"		IN	IN			"	OUT	"	2Q	"	"	"
			105		"						"		IN	IN			OUT	В	"	2 o	"		"
10		Same tests	and termin	nal condit	ions as for	r subarour	9 excent	Tc = 125°	C and limi	ts as show	vn								1		1.1	3.6	ns
11		Same tests																			0.9	3.4	ns
9	t _{THL}	3004	106	+2.0 V	OUT	B	IN	IN	C GIIG IIIIII	5 45 5110W	-3.2 V						В	В	+2.0 V	1Q	1.0	3.1	ns
Tc = 25°C	TIFIL	Fig 4	107	"	В	OUT	IN	IN			"	"					"	"	"	1 Q	"	"	"
		,	108												INI	Įķi.		OUT					,,
			108			В.									IN IN	IN IN	OUT	OUT B		2Q			
															iiN	1111		נ]	2 Q			
		Fig 5	110		OUT	"			IN	IN	" "						В			1Q	" "		" "
		"	111	"	В	OUT			IN	IN	"						"	"	"	1 Q	"	"	"
		"	112	"		В					"		IN	IN			"	OUT	"	2Q	"	"	"
		"	113	"	"	"					"		IN	IN			OUT	В	"	2 Q	"		"
10															1.1	3.6	ns						
11		Same tests																			0.9	3.4	ns
		Jame lesis	anu temi	ıaı condi	10115 85 10	usublion	э, except	1000°	o and ilini	.s as S110V	/II.										0.9	5.4	115

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TABLE III. Group A inspection for device type 02 - Continued.

For terminal conditions see table IIIA

	For terminal conditions see table IIIA Case E 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 MIL-STD- Case E 5 6 7 8 9 40 41 12 13 14 45 46 4 2 3 4																						
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	nits	Unit
		method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 o	1CLR	1P/S	1CE	1D	V _{EE}	CC	2D	2CE	2P/S	2CLR	2 o	2Q	V _{CC2}	1	Min	Max	
9		3003	114	+2.0 V	В	OUT	IN	IN			-3.2 V						B	В	+2.0 V	_	1.1	3.3	ns
	t _{TLH1}			+2.0 V	_	001					-3.2 V						ь	В	+2.0 V	1 Q	1.1	3.3	ns
Tc = 25°C		Fig 4	115		OUT	В	IN	IN			"								"	1Q	"	"	"
		"	116	"	В	"					. "				IN	IN	OUT	"	"	2 Q	"	. "	"
			117		"	"					"				IN	IN	В	OUT	"	2Q	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.															1.0	3.9	ns				
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.															1.0	3.7	ns				
9	t _{TLH2}	3003	118	+2.0 V	OUT	В			IN	IN	-3.2 V						В	В	+2.0 V	1Q	1.5	3.3	ns
Tc = 25°C		Fig 5	119		В	OUT			IN	IN								"	. "	1 Q		. "	
			120		"	В					"		IN	IN				OUT	"	2Q	"	"	"
		"	121		"	"					"		IN	IN			OUT	В	"	2 o	"	"	"
10																	1.2	3.9	ns				
11		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown. Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.															1.3	3.7	ns				
9	t _{THL1}	3003	122	+2.0 V	OUT	В	IN	IN			-3.2 V						В	В	+2.0 V	1Q	1.1	3.3	ns
Tc = 25°C		Fig 4	123	"	В	OUT	IN	IN										"	"	1 o	"	"	"
			124			В									IN	IN		OUT		2Q			
			125			"									IN	IN	OUT	В		2 0			
10		Cama taata	and tarmin	al aandi	ione ee fe		0 000000	To - 1050	C and limi	to oo obou										20	1.0	3.9	ns
11		Same tests Same tests																			1.0	3.7	ns
9	+	3003	126	+2.0 V	OUT	B B) 9, ехсер і	1000	IN	IN	-3.2 V			ı		1	В	В	+2.0 V	1Q	1.5	3.3	ns
Tc = 25°C	t _{PHL2}	Fig 5	120	. Z.U V	B	OUT			IN	IN	J.Z V						"	"	12.0 V		".5	"	"
1.0 200		g o																OUT	l .	1 Q		۱	
			128 129			B							IN IN	IN IN			OUT	OUT B		2Q	,,		
			129										IIN	IIN			001	В		2 Q			
10]	Same tests	and termin	nal condi	tions as fo	r subgroup	9, except	Tc = 125	C and lim	its as show	vn.										1.2	3.9	ns
11		Same tests	and termi	nal condi	tions as fo	r subgroup	9, excep	Tc = -55°	C and limi	ts as show	/n.										1.3	3.7	ns

TABLE III. <u>Group A inspection for device type 03</u>. For terminal conditions see table IIIA

										or terrin	nai conc	וווטווג:	see table	IIIA									
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	ite	Unit
Oubgroup	Cyllibol	method	2	-	3	7	3	'	O	3	10	12	13	14	13	17	10	13	20	terminal	Liiii	113	Offic
		memod		.,															L	termina			
			Test no.	V_{CC1}	1Q	2Q	3Q	1D	2D	3D	V_{EE}	CLK	4D	5D	6D	4Q	5Q	6Q	V_{CC2}		Min	Max	
1	V _{OH}	3006	1	GND	A	A	A	V_{IH1}			-5.2 V	C				A	A	A	GND	1Q	93	78	V
Tc = 25°C			2	"					V_{IH1}		"	"				"	. "	"	. "	2Q		"	
			3							V_{IH1}									"	3Q			
			4	"							"		V_{IH1}							4Q			
			5									".		V_{IH1}					"	5Q			
			6												V_{IH1}					6Q			
2		Same tests																			825	63	V
3		Same tests	and termin		ions as fo	r subgroup	1, except	Tc = -55°	C and limit	s as show											-1.08	88	V
1	V_{OL}	3007	7	GND	Α	Α	Α	V_{IL1}			-5.2 V	С				Α	Α	Α	GND	1Q	-1.85	-1.62	V
Tc = 25°C			8	"	"	"	"		V_{IL1}		"	"				"	"	"	"	2Q	"	"	
			9	"	"	"	"			V_{IL1}	"	"				"	"		"	3Q	"	"	
			10	"	"	"	"				"	"	V_{IL1}			"	"	"	"	4Q	"	"	
			11	"	"	"	"				"	"		V_{IL1}		"	"	"	"	5Q	"	"	
			12	"	"	. "	. "				"	"			V_{IL1}		"		. "	6Q		"	
2		Same tests																			-1.82	-1.545	V
3		Same tests	and termin	nal condit	tions as fo	r subgroup	1, except	t Tc = -55°	C and limi	ts as show	n.										-1.92	-1.655	V
1	Precond		13	GND	Α	Α	Α	V_{IL1}			-5.2 V	С				Α	Α	Α	GND		95		V
Tc = 25°C	V_{OTH}		14	"	"	"	"	V_{ITH}			"	С					"	"	"	1Q			
	V_{OTH}		15	"	"	"	"	V_{IL1}			"	D				"	"	"	"	1Q	"		
	Precond		16	"	"	"	"	V_{IL1}			"	С					"	"	"				
	V_{OTH}		17	"	•	=	=	V_{IH1}			"	E				=	"		"	1Q	•		
	Precond		18						V_{IL1}			С					"	"	"				
	V_{OTH}		19	"	"	"	"		V_{ITH}		"	С				"	"		"	2Q	"		"
	V_{OTH}		20	"	"	"	"		V_{IL1}		"	D				"	"		"	2Q	"		"
	Precond		21	"	"	"	"		V_{IL1}		"	С				"	"	"	"		"		"
	V_{OTH}		22	"	"				V _{IH1}		"	Е				-	"	"	"	2Q			"
	Precond		23	"	"	"	"			V_{IL1}	"	С				"	"	"	"		"		"
	V _{OTH}		24	"						V_{ITH}		С								3Q			
	V _{OTH}		25	"						V_{IL1}	"	D								3Q			
	Precond		26							V _{IL1}		C											
	V _{OTH}		27							V_{IH1}		E								3Q			
	Precond		28		i i							С	V _{IL1}			i.			l :	40			
	V _{OTH}		29									С	V _{ITH}						"	4Q			
	V _{OTH} Precond		30 31	,,								D C	V _{IL1}							4Q			
	V _{OTH}		31									E	V_{IL1} V_{IH1}							4Q			
			33									C	v _{IH1}	\/					-	44			
	Precond		33 34									C		$V_{\rm IL1} \ V_{\rm ITH}$						5Q			
	V_{OTH} V_{OTH}		35									D		V _{ITH} V _{IL1}						5Q 5Q			
	Precond		36									С		V _{IL1} V _{IL1}						ઇહ			
	V _{OTH}		37									Ē		V _{IL1} V _{IH1}						5Q			
	Precond		38									C		V IH1	V _{IL1}		"	"	"	50			
	V _{OTH}		39									C			V _{IL1} V _{ITH}					6Q			
	V _{OTH}		40									D			V _{IL1}					6Q			
	Precond		41									C			V _{IL1}					0 4			
	V _{OTH}		42	"								Ĕ			V _{IH1}		"		"	6Q			
2		Same tests		al condit	ions as fo	r subarour	1 excent	Tc = 125°	C and limi	ts as show	/n				- 101	1				~	845		
3		Same tests																			-1.1		
	l	טעוווט וכטנט	and tellill	iai conull	10110 as 10	Jungioup	, i, cacepi		o and mill	o ao Silow	11.										15.1		

TABLE III. Group A inspection for device type 03 - Continued.

For terminal conditions see table IIIA

													see table										
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
	,	method	2																	terminal			
			Test no.	V _{CC1}	1Q	2Q	3Q	1D	2D	3D	V _{FF}	CLK	4D	5D	6D	4Q	5Q	6Q	V _{CC2}		Min	Max	
1	Precond		43	GND	A	A	A	V _{IH1}		0.5	-5.2 V	C		- 05	- 05	A	A	A	GND			-1.6	V
Tc = 25°C	V _{OTL}		44	"	"	"	"	V _{ITL}			"	Č				"	"	"	"	1Q		"	
200	V _{OTL}		45				"	V _{IH1}				D				"	"	"	"	1Q		"	"
	Precond		46		"	"	"	V _{IH1}			"	С				"	"		"			"	"
	V_{OTL}		47		•	•	-	V_{IL1}			•	E				"	"	"	"	1Q		"	"
	Precond		48						V_{IH1}			С					"	"	"			"	"
	V _{OTL}		49						V_{ITL}			С							"	2Q		"	
	V _{OTL}		50						V _{IH1}			D								2Q			
	Precond		51						V _{IH1}			C E								2Q			
	V _{OTL}		52						V _{IL1}							-	-			2Q			
	Precond V _{OTL}		53 54							$V_{\rm IH1}$ $V_{\rm ITL}$		C								3Q			
	V _{OTL}		55							V _{ITL} V _{IH1}		D								3Q 3Q			
	Precond		56							V _{IH1}		C						"		30			
	V _{OTL}		57		"	"	"			V _{II 1}	"	Ē				"	"	"	"	3Q		"	"
	Precond		58	"			"					С	V _{IH1}			"	"	"	"			"	"
I	V _{OTL}		59	"				1				С	V_{ITL}			"	"	"	"	4Q		"	"
1	V _{OTL}		60	"								D C	V_{IH1}				. "	"	"	4Q		"	"
I	Precond		61					1				C	V _{IH1}				l ".	l ".					
	V _{OTL}		62	- "	- "	- "	- "				- "	E	V_{IL1}				- "			4Q			
	Precond		63									С		V _{IH1}					"	50			
	V _{OTL}		64 65									C D		V _{ITL}						5Q 5Q			
	V _{OTL} Precond		66									С		V _{IH1} V _{IH1}						5Q			
	V _{OTL}		67									E		V _{IH1}						5Q			
	Precond		68									C		V IL1	V _{IH1}		"	"		- 00			
	V _{OTL}		69									č			V _{ITL}	"	"			6Q			
	V _{OTL}		70									D			V _{IH1}					6Q			
	Precond		71		"	"	"				"	С			V _{IH1}	"	"		"			"	"
	V_{OTL}		72		"	"					"	E			V_{IL1}	"	"	"	"	6Q		"	"
2		Same tests																				-1.525	V
3		Same tests			tions as fo	r subgroup	1, except	Tc = -55°	C and limit	s as show												-1.635	V
1	I _{EE}	3005	73	GND							-5.2 V								GND	V _{EE}	-110		mA
Tc = 25°C																							
2		Same tests																			-121		mA
3		Same tests			tions as fo	r subgroup	1, except		C and limit	s as show											-121		mA
1	I _{IH1}	3010	74	GND				V _{IH1}			-5.2 V								GND	1D		220	μΑ
Tc = 25°C			75						V_{IH1}										" "	2D		"	"
			76							V_{IH1}			.,							3D		"	
1			77 78					1					V_{IH1}	.,			1	1	"	4D 5D			.,
1			78 79					1						V_{IH1}	V _{IH1}		1	1		5D 6D			
2		Como tosto		ol condi	tions so fo	r oubarc	1 00000	To = 1050	C and lim	to on ohar	ın			l	V _{IH1}	ı	l	l	l l	עס		375	
3		Same tests																				375	μA
1	-	Same tests 3010	and termir	GND	uons as fo	subgroup	ı, except	1 1 C = -55°	c and limit	s as snow	n. -5.2 V	\/ I		1		1	1	1	GND	CLK		310	μΑ
Tc = 25°C	I _{IH2}	3010	00	GIND							-5.2 V	V_{IH1}							GIND	CLK		310	μΑ
2		Same tests	and termin	al condi	tions as fo	r eubarour	1 00000	To = 1259	C and limi	te ac char	m					i	l	l	ll			527	μА
3		Same tests																				527	μA uA
1	III	3009	81	GND	แบกร สร 10	subgroup	i, except	V _{IL1}	c and nimi	5 dS S110W	n. -5.2 V	- 1				1	l		GND	1D	0.5	JZI	
Tc = 25°C	'IL	3009	82	GIVD "				V IL1	$V_{\rm IL1}$		J.Z V								"	2D	"		μ Α "
10 - 25 0			83						V IL1	V _{IL1}										3D			
			84							V IL1			V_{IL1}							4D			
			85					1					▼ IL1	V _{IL1}			1	1	"	5D	"		"
			86											* 11.1	V _{II 1}				"	6D	"		"
2		Same tests		nal condit	tions as fo	r subarour	1. excent	Tc = 125°	C and limi	ts as show	vn.	1			- 161					*-	0.3		μА
3																					0.5		μA
		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.													μι								

TABLE III. Group A inspection for device type 03 - Continued.

For terminal conditions see table IIIA

									F	or termi	nal con	ditions	see table	: IIIA									
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	nits	Unit
Cabgroup	Cymbol	method	2	-		-		,					10		10		.0	10		terminal		iito	Onic
			Test no.	V _{CC1}	1Q	2Q	3Q	1D	2D	3D	V _{FF}	CLK	4D	5D	6D	4Q	5Q	6Q	V _{CC2}		Min	Max	
9	F _{MAX}	Fig 9	87	+2.0 V	OUT	B	B	P1	V _{OL}	V _{OI}	-3.2 V	IN	V _{OL}	V _{OL}	V _{OL}	B	B	B	+2.0 V	1Q	62.5	IVIAA	MHz
Tc = 25°C	MAX	i ig s	88	12.0 V	B	OUT	В	V _{OL}	P1	V _{OL}	-J.Z V	"	V OL	V OL	V OL	"	"	-	12.0 V	2Q	02.5		"
10 - 23 0			89		"	B.	OUT	"	V _{OI}	P1			"							3Q	"		"
			90	"	"	"	В	"	"	V _{OL}	"	"	P1	"	"	OUT				4Q	"		
			91		"	"		"	"	"		"	VoL	P1	"	В	OUT			5Q	"		
			92	"	"	"	"	"	"	"		"	V _{OL}	V _{OL}	P1	В	В	OUT		6Q	"		"
10		Same tests	and termin	al condi	tions as fo	r subgroup	9, except	Tc = 125	C and limi	its as shov	vn.										62.5		MHz
11		Same tests				r subgroup		Tc = -55°	C and limit	ts as show											57.5		MHz
9	t _{TLH}	Fig 9	93	+2.0 V	OUT	В	В	IN			-3.2 V	IN				В	В	В	+2.0 V	1Q	1.1	4.0	ns
Tc = 25°C			94	"	В	OUT	В		IN			"								2Q	"	"	
			95			В	OUT			IN						T				3Q			
			96 97				B						IN	IN		OUT B	OUT			4Q			
			98											IIN	IN	B	B	OUT		5Q 6Q			
10		Same tests	•	nal condi	tione as fo	r eubarou	n 0 evcent	Tc = 125	°C and lim	ite ae ehou	vn				II V			001	1	00	1.0	4.5	ns
11		Same tests																			1.0	4.3	ns
9	t _{THI}	Fig 9	99	+2.0 V	OUT	B	В	IN	C and min	13 43 3110	-3.2 V	IN				В	В	В	+2.0 V	1Q	1.1	4.0	ns
Tc = 25°C	THE	9 0	100	"	B.	OUT	В		IN		"	"				"	"	-	"	2Q		"	
.0 20 0			101		"	В	OUT			IN										3Q			
			102		"	"	В					"	IN			OUT				4Q	"	"	
			103	"	"	"						"		IN		В	OUT	"		5Q	"	"	
		"	104	"	"	"	"				"	"			IN	В	В	OUT	"	6Q	"	"	"
10		Same tests																			1.0	4.5	ns
11		Same tests				r subgrou			C and limi	ts as show											1.0	4.3	ns
9	t _{PLH1}	Fig 9	105	+2.0 V	OUT	В	В	IN			-3.2 V	IN				В	В	В	+2.0 V	1Q	1.5	4.5	ns
Tc = 25°C			106		В	OUT	В		IN											2Q			
			107			В	OUT B			IN			INI			OUT.				3Q			
			108 109				В "						IN	IN		OUT B	OUT			4Q 5Q			
			110											IIN	IN	B	В	OUT		6Q			
10		Same tests		al condi	tione as fo	r subarour	0 evcent	Tc = 125	C and limi	ite ae ehov	/n				IIV			001	1	00	1.3	5.3	ns
11		Same tests																			1.2	4.9	ns
9	t _{PHI 1}	Fig 9	111	+2.0 V	OUT	B	B B	IN	l and min	10 40 011011	-3.2 V	IN				В	В	В	+2.0 V	1Q	1.5	4.5	ns
Tc = 25°C	PHLI	9 -	112		В	OUT	В		IN		J. <u></u> ,					"	"	-	"	2Q	"	"	"
200			113		"	В	OUT			IN	"	"						"		3Q	"	"	"
		"	114 " " B " " IN OUT " " 4Q														"	"	"				
		"	115 " " " B OUT " " 5Q														"	"	"				
	1		" 116 " " " " " 6Q etests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.														"	"					
10	1																				1.3	5.3	ns
11		Same tests	and termin	nal condi	tions as fo	or subgroup	p 9, except	t Tc = -55°	C and limi	ts as show	n.										1.2	4.9	ns

TABLE III. <u>Group A inspection for device type 04</u>. For terminal conditions see table IIIA

													see table										
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
	,	method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 o	1CLR	1P/S	1K	1J	V _{EE}	С	2J	2K	2P/S	2CLR	2 o	2Q	V _{CC2}		Min	Max	
										_			-										
1	V _{OH}	3006	1	GND	Α	Α	V _{IH1}				-5.2 V						Α	Α	GND	1 Q	93	78	V
Tc = 25°C		"	2	"	"	"		V_{IH1}			"						"	"	"	1Q		"	"
		"	3	"	"	"					"					V_{IH1}	"	"	"	2 Q		"	"
			4												V _{IH1}					2Q			
2		Same tests	and termi	nal condi	tions as fo	r subarour	1. except	Tc = 125°	C and lim	its as show	vn.				- 101	l.	l	1			825	63	V
3		Same tests																			-1.08	88	V
1	V _{OL}	3007	5	GND	Α	Ā		V _{IH1}			-5.2 V						Α	Α	GND	1 o	-1.85	-1.62	V
Tc = 25°C			6				V _{IH1}													1Q			
10 - 23 0			7				V IH1								V _{IH1}								
					١.										• 101	.,				2 Q			
			8				4	T- 405	0 1 1:							V _{IH1}				2Q	-1.82	-1.545	 V
3		Same tests																			-1.02	-1.655	V
1	V _{OTH}	Same tests	and termi	GND	A A	A A	V _{IL1}		V _{IL1}		n. -5.2 V	V_{IL1}	V _{IL1}	V_{IL1}	V _{IH1}	V _{IL1}	Α	Α	GND	1Q	-1.92	*1.000	V
Tc = 25°C	▼ OTH		10	"	-	, , , , , , , , , , , , , , , , , , ,	V IL1	V _{IH1}	V (L1	V _{IL1}	-5.2 V	V IL1	V IL1	V IL1	V _{IH1} V _{IH1}	V _{IL1}	<u>"</u>	<u> </u>	"	2Q	55		,
1.0 200			11	"	"	"	V_{ITH}	V_{IL1}		"	"		"		V _{IL1}	V _{ITH}	"	"	"	1 Q			"
			12												,,					_			
1							V _{ITH}									V _{ITH}				2 Q]		
			13	"	"	"	V_{IL1}	"	"	"	"	"	"		"	V_{IL1}	"	"	"	1 Q			"
			14		"					"			"							2 Q			
			15					1/							V _{ITL}					_			
								V _{ITL}												1 Q			
			16	"	"	"	"	V_{ITL}	"	"			"		V_{ITL}		"	"	"	2 Q			"
			17	"	"	"	"	V _{ITH}	"	"	"	"	"	"	V _{ITH}		"	"	"	1Q			
			18	"	"	"	"	V _{ITH}	"	"		"	"		V _{ITH}	"	"	"	"	2Q			"
			19	"		"	"	V _{IL1}							V_{IL1}		" "			1Q			"
			20	<u> </u>	- "	- "	."	- "	- "	- "			- :	- :	- "	,"	- "	- "	- "	2Q			
			21 22				V _{ITL} V _{ITL}									$V_{\rm ITL}$				1Q 2Q			
			23		"	"	VITH		"	"						VITH				_			"
				١	١.					١.										1 Q			
			24				V _{ITH}									V_{ITH}				2 Q			
			25	"		•	V_{IL1}		V _{ITH}					V _{ITH}		V_{IL1}				1 Q			"
			26		"	"	"		"	"										_			"
			27									.,								2 Q			
			21									V _{ITL}								1 Q			
			28	"	"	"	"	"	"	"	"	V_{ITL}	"		"	"	"	"	"	2 o			"
			29	"	"	"	"		"	ш	"	V _{ITH}		"	"		"	"	"	1Q			
			30	"	"	"	"			"	"	V_{ITH}	"		"		"	"	"	2Q			"
			31		"							V_{IL1}		:					"	1Q			".
1			32					- "	.,,		- "	V _{IL1}	"			-				2Q	- "		
1			33 34						V _{IL1}		ı,	"		V _{IL1}						1Q 2Q			
1			35							Vitu		"	VITH					"		2Q 1Q			
1		35 36 " " " " " " " " " " " " " " " " " " "													"	2Q			"				
		37 " " " " " " V _{II} " " " " " " "													"	1Q			"				
		38 " " " " " " V _{ITL} " " " " " " " "													2Q			"					
1		39 "													"	1Q			" "				
1																				2 Q]		
1			41	"		"	"		"		"	V_{IL1}	"		"		"	"	"	1 a			"
			42										"				"	"					"
										V			\/					,	"	2 Q			,,
			43					-	-	V _{ITL}			V_{ITL}							1 Q			
1			44	"	"	"	"		"	V_{ITL}	"	"	V_{ITL}		"		"	"	"	2 Q			"
2	1	Same tests	and termi	nal condi	tions as fo	r subarour	1. excent	Tc = 125°	C and lim	its as show	vn.		j			1		1	1	-	845		V
3	1	Same tests	and termi	nal condi	tions as fo	r subarour	1. except	Tc = -55°	C and limi	ts as show	'n.										-1.1		V
							,														•		

TABLE III. Group A inspection for device type 04 - Continued.

For terminal conditions see table IIIA

													see table										
		l	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
		method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 o	1CLR	1P/S	1K	1J	V _{EE}	С	2J	2K	2P/S	2CLR	2 o	2Q	V_{CC2}	1	Min	Max	
1	V _{OTH}		45	GND	Α	A	V _{IL1}	V _{IL1}	V _{IL1}	V _{ITL}	-5.2 V	V _{IL1}	V _{ITL}	V _{IL1}	V _{IL1}	V _{IL1}	A	Α	GND	1Q	95		V
Tc = 25°C	VOIR		46	"	7	7	"	VILI	" ILI	VIII.	0.2 0	" ILI	"	* IL I	"	" ILI	7	7	"	2Q	.00		
			47		"	"									"		"	"	"	1Q			
			48	"	"	"	"		"	"	"		"	"	"	"	"	"	"	2Q	"		"
			49							V _{IL1}			V _{IL1}		"					1Q			
			50 51												"					2Q 1Q			
			52						V _{ITL}					V _{ITL}	44					2Q			
			53	"	"	"	"		"	"	"	V _{IH1}	"	"	и	"	"	"	"	1 Q			"
			54									V _{IH1}			"					_			
															"					2 Q			
			55			-						V _{IL1}			-	-			-	1 Q			
			56		"	"			"	"	"		"		ш	44	"	"	"	2 Q			
			57	"	"	"	"		V_{ITH}				"	V_{ITH}	и	и		"	"	1 a			"
			58												"	ш				2 Q			
			59									V _{IH1}								1Q			
			60		"							V _{IH1}					"			2Q			
			61	"	"	"	"		"	"	"	V _{IL1}	"	"	"	"	"	"	"	1Q			
			62	"	"	"		"	"			"			"	"	"	"		2Q	"		
			63			"				V _{IH1}			V _{IH1}							1Q			
			64 65		- "	"				,	,	V _{IH1}		,		- "	,		-	2Q 1Q			
			66									V _{IH1}								2Q			
			67		"	"				"	"	V _{IL1}		"	"		"	"		1Q			
			68	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		
			69						V_{IL1}					V _{IL1}					"	1Q			
			70 71																	2Q _			
				_	_							V _{IH1}			_			_		1 Q	_		_
			72		"	"	"					V _{IH1}			"	"	"	"	. "	2 Q	•		"
			73	"	"	"	"		"			V _{IL1}	"		"	"		"	"	1 o			
			74										"		"			"	"	2 Q			
			75						V _{IH1}					V _{IH1}						_			
			76																	1 Q			
										.,			.,,							2 Q			
			77							V _{ITL}			V_{ITH}							1 Q	-		
			78	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	2 Q	"		
															1 a								
		80 " " " " " " " " V _{IH1} " " " " " " " 2q													_								
			81	"	"	"	"		"	"	"	V _{IL1}				"	"		"	1 Q			
			82					V _{IH1}				"			V _{IH1}					2 Q			
2	-	Same tests		al condi	tions as fo	r eubareur	1 eveent		C and limi	te ae ebou	/n				* 1111	1			l	∠ Q	845		V
3	1																				-1.1		V
		Daille 16919	e tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.										-1.1		v								

TABLE III. Group A inspection for device type 04 - Continued.

For terminal conditions see table IIIA

			Case E	1	2	3	4	5	6	7	8	oitions s	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883 method	Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured terminal	Lin	nits	Unit
			Test no.	V _{CC1}	1Q	1 Q	1CLR	1P/S	1K	1J	V _{EE}	С	2J	2K	2P/S	2CLR	2 Q	2Q	V _{CC2}		Min	Max	
1	V _{OTL}		83	GND	Α	Α	V _{IL1}	V _{IH1}	V _{IL1}	V _{IL1}	-5.2 V	V _{IL1}	V _{IL1}	V _{IL1}	V _{IH1}	V _{IL1}	Α	Α	GND	1 o		-1.6	V
Tc = 25°C			84	"	"	"	"	V_{IL1}	V_{IH1}	"	"			"	V _{IH1}	"		"		2 Q		"	"
			85				V _{ITH}		V _{IL1}						V _{IL1}	V _{ITH}				1Q			
			86 87			"	V_{ITH} V_{IL1}									V_{ITH} V_{IL1}				2Q 1Q			
			88		"	"		"		"	"	-	"		"					2Q			
			89 90					V _{ITL} V _{ITL}	"					"	V _{ITL}					1Q 2Q			
			91	"	"	"	"	V _{ITH}	"	"	"	"	"	"	V _{ITH}	"	"	"	"	1 Q		"	
			92	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"		"	"	2 Q		"	
			93	"	"	"	"	V_{IL1}	"	"	"	и			V _{IL1}	"		"	"	1 o		"	
			94	"	"	"		V_{IL1}	"	"	"	44	"	"	V_{IL1}	"			"	2 Q			
			95	"	"	"	V _{ITL}		V_{IL1}	"	"	"	"	V _{IL1}	"	V _{ITL}		"		1 Q		"	"
			96	"	"	"	V _{ITL}	•		"	"			"	"	V _{ITL}		"		2 Q		"	
			97 98			"	V _{ITH}			"					"	V _{ITH}				1Q 2Q			
			99				V_{ITH} V_{IL1}		V _{ITH}					V _{ITH}		V _{ITH} V _{IL1}				1Q			
			100	"	"	"	-		"	"	"	"		"	-	"				2Q 1Q			
			101 102									V_{ITL}								2Q			
			103	"	"	"	"		"	"	"	V_{ITH}	"	"	"	"		"	"	1 Q		"	"
			104	"	"	"				"	"	V_{ITH}	"	"	"	"		"	"	2 Q		"	
			105	"	"	"			"	"	"	V _{IL1}	"	"	"	"		"	"	1 Q		"	"
			106	"	"	"			"	"	"		"	"		"				2 Q		"	"
			107	"	"	"			V_{IL1}	"	"		"	V_{IL1}	"	"				1 Q			"
			108	"	"	"			"	"	"			"		"				2 Q			
			109	"	"	"			"	V_{ITH}	"		V _{ITH}	"	"	"				1 o			"
			110	"	"	"			"	"	"	u	"			"				2 Q		"	"
			111	"	"	"					"	V_{ITL}		•	"	"		"		1 Q		"	
			112	"	"					"	"	V_{ITL}		•				"		2 Q		"	
			113	"	"	"	"	"	"	"	"	V _{ITH}	"	"	"	"	"	"	"	1Q		"	
			114 115									V _{ITH}								2Q 1Q			:
			116	"	"	"				"	"	V _{IL1}		"		"				2Q		"	"
			117 118	"						V _{ITL}			V _{ITL}				:			1Q 2Q		:	
			119							"	"	V _{IH1}								1 Q			
			120		"	"	"		"	"	"	V_{IH1}			"	"		"		2 Q			"
			121	"	"	"	"		"	"	"	V _{IL1}		"	"	"	"	"		1 Q	1	"	
			122	"	"	"	"		"	"	"	"	"	•	"	"			"	2 0		"	
2]	Same tests	and termi	nal condi	tions as fo	r subgroup	1, except	Tc = 125	°C and lim	its as show	wn.							•		•		-1.525	V
3		Same tests	and termi	nal condi	tions as fo	r subgroup	1, except	Tc = -55°	C and limi	its as shov	vn.											-1.635	V

TABLE III. Group A inspection for device type 04 - Continued.

For terminal conditions see table IIIA

													ee table										
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	nits	Unit
	,	method	2																	terminal			
			Test no.	V _{CC1}	1Q	. –	1CLR	1P/S	1K	1J	V _{EE}	С	2J	2K	2P/S	2CLR		2Q	V _{CC2}		Min	Max	
						1 Q											2 Q						
1	V_{OTL}		123	GND	Α	Α	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	Α	Α	GND	1 Q		-1.6	V
Tc = 25°C			124											"				"		2 Q			
																							_
			125			"		"	V_{ITL}	. "				V_{ITL}	. "	. "		"		1 a		"	"
			126	"	"			"		"	"	"	"		"	"	"			2 o		"	
																				- u			
			127	"	"	"	"	"		"	"	V_{IH1}	"	"	"	"	"	"	"	1 Q		"	
			128									V _{IH1}	V _{IL1}	"			"	"		2 Q		"	и
													- 121						<u> </u>			_	
			129				ı i					V _{IL1}		"						1Q 2Q		"	
			130 131						\/					1/			.,			2Q 1Q			
			132						V_{ITH}					V _{ITH} V _{ITH}						2Q			
			133						VIIH	"		V _{IH1}		VIIH		"		"					
				_									_				_	_		1 Q		_	_
			134			"		"		. "		V _{IH1}		"	. "	. "		"		2 Q		"	"
			135	"	"			"		"	"	V_{IL1}	"		"	"	"			1 a		"	
			136							и													
																				2 Q			
			137	"	"	"	"	"	"	V_{IH1}	"		V_{IH1}	"	"	"		"	"	1 Q		"	"
			138											"				"		2 Q			
			139									.,					.,			_			
												V _{IH1}								1 Q			
			140	"	"	"	"		"	"	"	V_{IH1}	"	"	"	"		"	"	2 Q		"	"
			141		"	"	"	"	"	"	"	V _{IL1}			"	"		"	"	1 Q			"
																				I Q			
			142		-		-	-			-	**					-			2 Q			
			143	"	"			"	"	V_{IH1}	"	"	V_{IH1}	V_{IL1}	"	"	"	"		1 a		"	"
			144																	2 0			
																						_	_
			145									V _{IH1}								1Q			
			146 147									V _{IH1} V _{IL1}								2Q 1Q			
			148									V IL1								2Q			
			149		"	"			V _{IH1}	"	"		"	V _{IH1}	"	"	"	"	"	1Q			
			150												"			"		2Q		"	"
			151	"	"			"	"	V_{ITH}	"	"	V_{ITH}	"	"	"	"	"		1Q		"	"
			152	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			153									V _{IH1}								1Q			
			154 155									V _{IH1} V _{IL1}								2Q 1Q			
			156									V _{IL1}								2Q			
2	ĺ	Same tests		nal condi	itions as fo	or subaroun	1. excent	Tc = 125	C and lim	its as show	wn.	* ILI			ı	l .				~		-1.525	V
3	1	Same tests																				-1.635	V
1	I _{EE}	3005	157	GND		3.200	,				-5.2 V								GND	V _{EE}	-68	l l	μΑ
Tc = 25°C]	<u> </u>	L	<u> </u>	<u></u>	<u> </u>				L			<u></u>		L	L		<u> </u>	<u> </u>			L l	r: -
2		Same tests													-				-		-75		μΑ
3		Same tests			itions as fo	or subgroup	1, except	Tc = -55°		ts as shov											-75		μΑ
1	I _{IH1}	3010	158	GND					V _{IH1}	1	-5.2 V				1	1		1	GND	1K		265	μΑ
Tc = 25°C		. "	159							V_{IH1}	"								"	1J		"	"
		".	160	"								V _{IH1}	.,							С		"	"
			161 162										V _{IH1}	\/						2J 2K			,
2	1	Same tests		nal condi	tions as fo	r eubareur	1 eveent	To = 125	C and lim	ite ae ebo	L MD		<u> </u>	V_{IH1}	L	L		L	<u> </u>	۷N		450	^
3	1																					450	μA μA
٥	l	Same tests	and termi	nai condi	แบบร สร โด	n subgroup	i, except	10 = -05°	o and iimi	15 85 SI10V	VII.											450	μА

TABLE III. Group A inspection for device type 04 - Continued.

For terminal conditions see table IIIA

												aitions s											
		MIL OTO	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	nits	Unit
		method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 Q	1CLR	1P/S	1K	1J	V _{EE}	С	2J	2K	2P/S	2CLR	2 Q	2Q	V _{CC2}		Min	Max	
9	I _{IH2}	3010	163	GND			V _{IH1}				-5.2 V								GND	1CLR		390	μΑ
Tc = 25°C		и	164					V_{IH1}												1P/S		"	"
		"	165												V_{IH1}					2P/S			
		66	166	"							u					V_{IH1}			"	2CLR		"	•
10		Same tests	and termin	nal condit	tions as fo	r subgroup	9, except	Tc = 125°	C and limi	its as shov	vn.											665	μΑ
11		Same tests			tions as fo	r subgroup	9, except	Tc = -55°	C and limit	ts as show												665	μΑ
9	I _{IL}	3009	167	GND					V_{IL1}		-5.2 V								GND	1K	3.5		μΑ
Tc = 25°C		44	168	"						V_{IL1}										1J	"		"
			169									V_{IL1}								С	"		
			170								i i		V_{IL1}	.,						2J			
			171 172				V _{IL1}							V_{IL1}						2K 1CLR			
			173				V _{IL1}	V _{IL1}												1P/S			
			174					V IL1							V _{II 1}					2P/S			
			175												* IL1	V _{II 1}				2CLR			"
10		Same tests	and termin	nal condi	tions as fo	r subgroup	9, except	Tc = 125°	C and limi	its as show	vn.										0.3		μΑ
11		Same tests	and termin	nal condit	tions as fo	r subgroup	9, except	Tc = -55°	C and limit	ts as show	/n.										0.5		μA
9	F _{MAX}	Fig 10	176	2.0 V	OUT	В			V_{IL2}	V_{IL2}	-3.2 V	IN	V_{IL2}	V_{IL2}			В	В	2.0 V	1Q	62.5		MHz
Tc = 25°C		Fig 10	177	"	В				"	"	"	"	и	"			"	OUT	"	2Q	"		"
10		Same tests																			57.5		MHz
11		Same tests					9, except		C and limit	ts as show											52.5		MHz
9	t _{TLH}	Fig 11	178	2.0 V	OUT	В		IN	V_{IH2}	V_{IH2}	-3.2 V		V _{IH2}	V _{IH2}			В	В	2.0 V	1Q	1.1	4.5	ns
Tc = 25°C			179		В	OUT	IN		"											1 o	. "	. "	"
			180		"	В			"						IN			OUT		2Q		"	"
			181	"	"				"	"	"			"		IN	OUT	В	"	2 o	"	"	"
10	-	Same tests	and termin	nal condi	tions as fo	r eubaroun	0 evcent	To = 1259	C and lim	ite ae ehov	vn.				l				1	- u	1.0	5.3	ns
11		Same tests																			1.0	4.8	ns
9	t _{TLH}	Fig 12	182	2.0 V	OUT	В	V _{IL2}	V _{IL2}	V _{IL2}	V _{IL2}	-3.2 V	IN	V_{IL2}	V_{IL2}	V _{IL2}	V _{IL2}	В	В	2.0 V	1Q	1.1	4.5	ns
Tc = 25°C	TILM	119 12	183	2.0 0	В	OUT	VIL2	VIL2	VIL2	"IL2	0.2 0	"	"IL2	"IL2	"IL2	V IL2	"	-	2.0 0	_	""	"	"
10 20 0		_					_	_	_	_				_		_				1 Q		_	_
			184 185			В									- "		OUT.	OUT		2Q			
			100														OUT	В		2 Q			
10		Same tests	and termin	nal condi	tions as fo	r subgroup	9, except	Tc = 125°	C and limi	its as show	vn.										1.0	5.3	ns
11		Same tests																			1.0	4.8	ns
9	t _{THL}		186	2.0 V	OUT	В	IN		V_{IH2}	V _{IH2}	-3.2 V		V _{IH2}	V_{IH2}			В	В	2.0 V	1Q	1.1	4.5	ns
Tc = 25°C		"	187	"	В	OUT		IN	"	"	"		"	"			"	"	"	1 o	"	"	"
		"	188		"	В			"							IN	"	OUT		2Q	"		
			189			"			"					и	IN		OUT	В.		2 0			
- 10	4			L											l				l	∠ Q	4.0		
10	1	Same tests																			1.0	5.3	ns
11		Same tests															_	_			1.0	4.8	ns
9	t _{THL}		190	2.0 V	OUT	В	V _{IL2}	V _{IL2}	V _{IL2}	V _{IL2}	-3.2 V	IN.	V _{IL2}	V _{IL2}	V _{IL2}	V _{IL2}	В	В	2.0 V	1Q	1.1	4.5	ns "
Tc = 25°C			191		В	OUT							-				"			1 Q	"		
		"	192	"	"	В	"	"	"		"	"				"	"	OUT	"	2Q	"	"	"
		"	193	"	"	"	"	"	"	"	"	"		"		"	OUT	В	"	2 Q	"	"	"
10	1	Same tests	and termi	nal condi	tione as fo	r eubarous	0 avcant	Tc = 1259	C and lim	ite ae cho	vn				l		i		l	- u	1.0	5.3	ns
11	1	Same tests																			1.0	4.8	ns
	<u> </u>	Same lests	and termil	iai curidi	110115 85 10	i subgroup	e, except	10 = -55°	o and iimii	15 dS S110W	/11.										1.0	4.0	115

TABLE III. Group A inspection for device type 04 - Continued.

For terminal conditions see table IIIA

									F	or termi	nai cond	litions s	ee table	HIIA									
			Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		MIL-STD-	Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
Subgroup	Symbol	883	Case	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured	Lim	its	Unit
	,	method	2																	terminal			
			Test no.	V _{CC1}	1Q	1 o	1CLR	1P/S	1K	1J	V_{FF}	С	2J	2K	2P/S	2CLR	2 o	2Q	V _{CC2}	1	Min	Max	
		F: 44	404		OUT								.,	.,						10	4.04		
9 Tc = 25°C	t _{PLH1}	Fig 11	194 195	2.0 V	OUT B	B OUT	IN	IN	V _{IH2}	V _{IH2}	-3.2 V		V _{IH2}	V _{IH2}			B	B	2.0 V	1Q	1.01	5.0	ns "
10 = 25 0					ь		IIN													1 Q			
		66	196			В				u	"		"	u	IN			OUT		2Q			
			197								•					IN	OUT	В		2 Q		"	"
10		Same tests	and termin	nal condi	tions as fo	r subgroup	9, except	Tc = 125	C and lim	its as show	vn.				•	•	•	•		•	1.0	5.9	ns
11		Same tests	and termin	nal condi	tions as fo	r subgroup	9, except	Tc = -55°	C and limi	ts as show	'n.										1.0	5.4	ns
9	t _{PHL1}	Fig 11	198	2.0 V	OUT	В	IN		V_{IH2}	V_{IH2}	-3.2 V		V_{IH2}	V_{IH2}			В	В	2.0 V	1Q	1.01	5.0	ns
Tc = 25°C		44	199	ш	В	OUT		IN	es	ш	"		"	и			a	"	"	1 o	и	"	"
		"	200			В							"	и		IN	ш	OUT		2Q			
		"	201		и	u					"		"	u	IN		OUT	В		2 o		"	"
10	-	Same tests	and tarmir	aal aandi	tions as fo	r oubaroup	0 oveent	To = 125	C and lim	ita aa ahay	un.									- Q	1.0	5.9	ns
11	-	Same tests																			1.0	5.4	ns
9	t _{PLH2}	Fig 12	202	2.0 V	OUT	R B	V _{IL2}	V _{IL2}	V _{IL2}	V _{II 2}	-3.2 V	IN	V _{IL2}	V_{IL2}	V _{IL2}	V _{IL2}	В	В	2.0 V	1Q	1.0	4.5	ns
	IPLH2	119 12	203	2.0 V	В	OUT	VIL2	V IL2	VIL2	V IL2	-5.2 V	"	VIL2	V 1L2	V IL2	V IL2	"		2.0 V		1.0	4.5	"
			004			-						"					"	OUT		1 Q			
			204 205		ш	B	,					"				,,	OUT	OUT B		2Q			
																	001	ט		2 Q			
10		Same tests																			1.0	5.3	ns
11		Same tests				r subgroup															1.0	4.8	ns
9	t _{PHL2}	Fig 12	206	2.0 V	OUT	В	V_{IL2}	V_{IL2}	V _{IL2}	V_{IL2}	-3.2 V	IN.	V_{IL2}	V_{IL2}	V _{IL2}	V _{IL2}	В	В	2.0 V	1Q	1.0	4.5	ns
Tc = 25°C		"	207		В	OUT	"								"					1 Q		"	"
		"	208		"	В	"	"	"	"	"	"	"	"	"	"	u	OUT		2Q		"	"
		"	209	"	ш	и	"	"	"	"	"	"	"	"	"	"	OUT	В		2 Q			"
10	1	Same tests	and termin	nal condi	tions as fo	r subgroup	9, except	Tc = 125	C and lim	its as show	vn.		•							•	1.0	5.3	ns
11	1	Same tests	and termin	nal condi	tions as fo	r subgroup	9, except	Tc = -55°	C and limi	ts as show	'n.										1.0	4.8	ns

5. PACKAGING

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

- 6.1 <u>Intended use.</u> Microcircuits conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.
 - 6.2 Acquisition requirements. Acquisition documents should specify the following:
 - a. Title, number, and date of the specification.
 - b. PIN and compliance identifier, if applicable (see 1.2).
 - c. Requirements for delivery of one copy of the conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
 - d. Requirements for certificate of compliance, if applicable.
 - e. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.
 - f. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.
 - g. Requirements for product assurance options.
 - h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
 - i. Requirements for "JAN" marking.
 - J. Packaging requirements (see 5.1).
- 6.3 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractor's parts lists.
- 6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

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6.5 <u>Abbreviations, symbols, and definitions.</u> The abbreviations, symbols, and definitions used herein are defined in MIL-PRF-38535, MIL-HDBK-1331, and as follows:

GND	Ground zero voltage potential
V _{OTH}	High-level threshold output voltage
	Low-level threshold output voltage
V _{ITH}	High-level threshold input voltage
V _{ITL}	Low-level threshold input voltage
V _{EEL}	Shifted power supply voltage for the purpose of ac testing
T _J	Circuit junction temperature
T _C	Case operating temperature
P _D	Circuit power dissipation
θ _{JC}	Junction to case thermal resistance

- 6.6 <u>Logistic support.</u> Lead materials and finishes (see 3.3) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish A (see 3.3). Longer length leads and lead forming should not affect the part number.
- 6.7 <u>Substitutability.</u> The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-35810 device types and may have slight physical variations in relation to case size. The presence of this information should not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-PRF-38535.

Military device type	Generic-industry type
01	10531
02	10631
03	10576
04	10535

6.8 Test limit compensation examples.

a. A device which has a power dissipation of 100 mW in case F is to be tested under a zero airflow condition. on figure 15, ΔT_J between 500 linear ft/min and zero airflow is +4°C. In order to adjust the various parameter limits, use figure 16 which defines the limit adjustment coefficients for ΔT_J . To adjust $V_{OH}(max)$ at -55°C, use the + ΔT_J column of the -55°C portion of figure 16 and locate the coefficient corresponding to $V_{OH}(max)$. This value is 1.25 mV/°C. Multiply the ΔT_J by the coefficient and algebraically add it to the -55°C $V_{OH}(max)$ limit from table III.

$$V_{OH}(max)$$
 (adjusted limit) = (+4°C) x (1.25 mV/°C) + (-880 mV)
= 5 mV -880mV = -875 mV
Use -875 mV

Follow the same procedure to adjust the remaining parameters at -55°C as well as all parameters at 25°C and 125°C.

b. A device with a power dissipation of 150 mW in case E is to be tested at an airflow of 200 linear ft/min and the 25°C testing is to be accomplished at an ambient temperature of +20°C. On figure 14 ΔT_J due to airflow is +3°C. The ΔT_J due to ambient temperature change is -5°C (25-20). Therefore the total ΔT_J = -5 +3 = -2°C. Using figure 16 find the 25°C, - ΔT_J column. To adjust the V_{OL} (max) for a negative ΔT_J , this value is 0.44 mV/°C. Multiply the ΔT_J by the coefficient and algebraically add it to the +25°C V_{OL} (max) limit from table III.

$$V_{OL}$$
 (max) (adjusted limit) = (-2°C) x (0.44 mV/°C) + (-1620 mV)
= -.88 mV $-$ 1620 mV = -1620.88 mV
Use $-$ 1621 mV

Follow the same procedure to adjust the remaining parameters at +25°C.

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - CR Navy - EC Air Force - 11 DLA - CC

Preparing activity: DLA - CC

(Project 5962-2007)

Review activities:

Army - MI, SM Navy - AS, CG, MC, SH, TD Air Force - 03, 19, 99

> NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at www.dodssp.daps.mil.